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TREATISE

ON

UTERINE HÆMORRHAGE

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IN ALL ITS FORMS;

WITH SOME VIEWS RESPECTING FISSIONS OF THE
OS UTERI AS THE FREQUENT CAUSE OF
ABORTION, WITH THEIR CURATIVE
TREATMENT.

BY AUGUSTUS K. GARDNER, A.M., M.D.,

Fellow of the New York Academy of Medicine.

FROM THE AMERICAN MEDICAL MONTHLY.

NEW YORK:

EDWARD P. ALLEN, 9 SPRUCE STREET.

1855.

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A TREATISE
ON
UTERINE HÆMORRHAGE.

BY AUGUSTUS K. GARDNER, A.M., M.D.,

FELLOW OF THE NEW YORK ACADEMY OF MEDICINE.

[From the American Medical Monthly, June, 1855.]

There is no scene in the experience of a physician more trying than the care of cases of flooding. They come when least expected, without premonition, often without obvious cause, and in a moment change a scene of rejoicing and happiness into one fraught with danger and filled with horror.

There is something in the mere flowing of blood instinctively fearful. Many will faint at the drop produced from the prick of a pin. The blood accompanying the surgeon's operations not only whitens the cheek of the reckless student, a spectator of the scene, but palsies the hand of the operator himself, to whom no consciousness of power, or frequent exposures to such scenes, renders him callous. Startling and fearful as may be the sight of streams of blood and clotted gore in various scenes, there are none found more appalling than in the obstetric chamber; none where more instant aid is required, and where the whole energies of the medical attendant are so imperatively demanded, or where presence of mind is more important. Decision, too, is necessary. There is no time for vacillation in opinion or action. No time to run home to hunt up some method of treatment. The surgeon, if he finds himself at fault in his anatomy, while an assistant compresses the artery, may turn to his manual for light respecting the course of an artery, but in

the floodings of the parturient there can be no temporizing. The knowledge of the requisite treatment must be present, and promptness also in its application. Neither the horror of the scene, the pools of blood, the ghastly, cadaveric appearance of the patient, the impeded respiration, the fluttering pulse; nor the faintings, the tears, or the wailings of mother or husband, the entreaties and prayers of surrounding friends, will disturb the equanimity of the educated and reliable physician. The true man, conscious of his own resources, instead of giving way, but rises as danger is most imminent.

Startling as is this hæmorrhage to the unexperienced; disagreeable and exciting to the man calm by reason of frequent observation; in proportion to the frequency of this accident, it can scarcely be esteemed dangerous. This is by reason of the skill of the physician. Left to itself death would not unfrequently occur therefrom, while it is now of comparatively unfrequent occurrence.

In no branch of the obstetric art have the beneficial results of patient observation, careful study, and justifiable experiment, redounded more to the credit of science and the benefit of the suffering. It is my purpose, at the present time, to review this subject, and to see what experience has found most reliable as preventive and curative in these dread cases.

Uterine hæmorrhage is of various sorts, and we shall consider it under two general divisions:

- 1st. Hæmorrhage from the unimpregnated uterus.
 - 2dly. Hæmorrhage from the impregnated uterus.
- These two grand heads I shall again subdivide into several classes:—

Hæmorrhage from the unimpregnated uterus may arise from congestion or hypertrophy of the uterus, where there appears no marks of active disease in the organ. The intercellular tissue being, however, somewhat congested, and the internal mucous membrane slightly reddened.

More frequently accompanying the congested uterus, there is chronic hypertrophy of the os and cervix uteri, and more or less extensive ulceration of both these portions. Very commonly this ulceration extends up the cavity of the cervix, and by means of the speculum, the blood may be seen freely exuding

True ulceration of the cervix uteri, is of two descriptions, syphilitic and cancerous. If the former, the specific character is to be destroyed by caustic, and such internal treatment given as the case may require. Hæmorrhage is rare from syphilitic ulcerations, still it does occasionally occur.

Polypi are easily disposed of. When small and within reach, they may be seized by forceps and twisted off. If larger, it may be necessary to ligature them, or to seize them by a graduated polypus forceps, with which by daily increasing the pressure upon the neck (the instrument being left hanging by it), it soon drops off. If within the os, the uterus should be induced to expel it, by means of Ergot, when it may be seized and treated as above advised.

Perhaps under this head may be classed the floodings from hydatids, as their existence is generally obscure, and the symptoms of their presence often resembling that of internal polypus. The administration of Ergot to cause their expulsion, is the appropriate treatment.

Hæmorrhage from cancer of the uterus, with which we will include the cauliflower excrescence, is very common with those afflicted with this grave malady. Where the disease is confined to the cervix, the better treatment would undoubtedly be excision, and more especially if the disease was the cauliflower excrescence. Farther than this, astringent washes, alum, and ice, inserted into the vagina, will often afford a temporary arrest. A lotion will frequently be found effectual, made as follows :

R.	Nitras Plumbi, gra. v.
	Aquæ, f. ʒj.
M.	ft. lotis.

The acetate of lead and the mineral acids, astringents, &c., internally, will often be of temporary benefit.

I come now to speak of the *hæmorrhages from the impregnated uterus*. Those that I have already described rarely are so excessive, if those arising from cancerous degenerations be excepted, as to threaten life by the immediate loss of blood,

apparently dying. So great was the extremity that it was not considered safe to allow another drachm to flow, and with great good judgment Dr. Barker proceeded to tampon not only the vagina, but even the os and cervix uteri. Success crowned this treatment, and when the next morning the tampons were removed, no further flow occurred.

Simple hypertrophy is more commonly found in females advanced in life, at the time of the cessation of the menstrual function. When profuse discharges accompany this condition, an alterative treatment at the seasons of its cessation, will be generally found to diminish its size, and consequently to finally restore the discharge to its proper quantity.

At the immediate time of its excessive flow, I have found nothing to arrest it more successfully than full and frequent doses of *Secale Cornutum*, either in powder or tincture. I have given a drachm of the tincture every quarter or half hour with decided relief. Ice, alum, *acetabulum*, &c., &c., the usual remedies employed, I need not here mention.

Far more frequently this hypertrophy of the uterus is accompanied by, and perhaps dependent upon, disease of the os and cervix uteri. In these cases, all dependent disease, with the menorrhagia, are entirely arrested by the topical treatment of these affections, by the use of the speculum, according to Bennett's method. The form of disease usually called ulceration, is not always in reality so, there being simply a loss of the epithelium of the mucous surface, exposing beneath a granulated surface. These granulations bleed very freely. They are usually covered with pus and mucous, and a glairy mucus is seen flowing from the cavity of the cervix. Sometimes, even the slight abrasion from the passage of a sound into the os, or the wiping of the granulations even, causes a flow of blood from the surface. Any caustic application, occasionally repeated, is sufficient to entirely restore the parts to their natural character. The hypertrophy both of the cervix and body of the uterus is restored to their natural state, as soon as the active disease is thus arrested. Occasionally a slight alterative course is found serviceable where the hypertrophy is great. This granular condition, which is an enlargement of the mucous follicles, is what is commonly called ulceration, as has before been stated.

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I come now to speak of the *hæmorrhages from the impregnated uterus*. Those that I have already described rarely are so excessive, if those arising from cancerous degenerations be excepted, as to threaten life by the immediate loss of blood,

although the secondary anæmic effects may result in death. In this class of cases time is afforded for thought and consultation.

It is from the hæmorrhages from the impregnated uterus that immediate death results, and it is these that we are now to examine. This class may well be considered as hæmorrhage occurring before and at full time ; and this class may again be subdivided into *ante partum* and *post partum* hæmorrhage ; each of which is capable of a further division, into hæmorrhage preceding and succeeding the delivery of the placenta.

Loss of blood may occur in both of the classes of cases referred to under the first grand division, to a fatal extent ; but while the fatal result may be the same in both cases, they are, in every other respect, far different. Except in rare instances, the hæmorrhage before full time is always preceding the delivery, while that at full time is posterior to it.

Hæmorrhage not unfrequently occurs at the next menstrual period following conception. The woman, especially she who has never borne children, after half suspecting from various signs that she was pregnant, at her usual period is not only "regular," but profusely so, with more than usual pain, and with numerous clots which have not previously characterized her periodic secretion. A careful examination of these clots would discover imbedded in them a rudimentary fœtus. The long formed habit of nature, conjoined perhaps to too vigorous exercise, too stimulant food, or even mental emotions, caused the secretion to be continued as usual, and the ovum to be expelled.

These cases are generally considered to be simple menorrhagia, and are treated accordingly. They rarely, if ever, result in farther difficulty.

At a somewhat later period in gestation, when the ovum is from two to five or six months, abortion is very frequent, when the hæmorrhage is alarming. These occur from various causes, *and never without a cause which should be discovered by the physician*, and the difficulty obviated afterward. This I wish most especially to have noted, that WHEREVER THERE IS A MISCARRIAGE, THERE IS ALWAYS PRESENT SOME ACTUAL PERCEPTIBLE AND OFTEN TANGIBLE CAUSE. In many cases this is easily known. Some injury, sudden fright, the effort of vomiting, has been suffi-

cient to destroy the integrity of the ovum, and as a dead substance, as a foreign body, it has been expelled. This may occur as the effect of mercury, or other medicines, the sympathetic action of the uterus stimulated by cathartics. Great fatigue may be the existing cause of the expulsive uterine action. But there are many abortions which have been considered to be without cause. Females have aborted without any particular reason, every few months during many years, and the physician, in his ignorance of any cause, has stated that it was from the force of habit; that there was a tendency, from habit, of the uterus to throw off its contents upon the least irritation or excitement, when the ovum arrived at a certain maturity. Females have been made to believe, what the physician himself, once equally credulous, believed, that there was a "tendency to abort;" and have been made to lie in bed for weeks and months, made sick by want of air and exercise, to prevent a senseless organ, devoid even of the nerves of sensation, from yielding to the temptation or tendency to abort.

Thanks to the added wisdom of the nineteenth century, we now know better than this. The new lights of science have added ocular evidence to the vain theories invented to conceal our ignorance.

At the given period, or thereabout, the woman with the uterus having these bad habits, perceives that the usual vaginal secretion is slightly tinged with red, which by degrees deepens in color, till a decided hæmorrhage, accompanied by pains in back, thighs, &c., with involuntary expulsive efforts, is the result; and sooner or later the fœtus is expelled. If one examine the uterus, as far as may be done by means of the speculum, either before these symptoms commence, or after the abortion is completed, he will find that there is local disease of the os uteri, which is the *fons et origo* of all the trouble, that there is uterine congestion, ulceration, or lesion of the epithelium, and enlargement of the mucous follicles, or fissure of the os.

Uterine congestion, as a cause of abortion, not unfrequently depends upon high-feeding—not too much in quantity, but too stimulating in its character upon the circulation. This is noticed in animals. Lewis S. Hopkins, M.D., says:

"In the August number of the *Farmer*, complaints are made of abortion in cows.

"High feeding has a direct tendency to produce this ; if a cow has done so once, meal should be kept from her a month or two before the anticipated period of abortion, or during the greater portion of the period of gestation. Many a female of the human species has only avoided the same 'mishap,' by strict attention to diet.

"Too high feeding, with no hard work, often produces an irritability not only of the nervous, but of the circulating system, in its minutest subdivisions, as spread over secreting surfaces. There is a greater tendency to this in the female system than in the male. The *mare* fed on oats, and but little used, will often become excessively snappish, and intensely cross. Withdraw her oats, and she loses this irritability ; or give her hard work, and the effect will be the same. If in the cow this irritability of the secreting surfaces, induced by continued high feeding, is fed and fanned by meal and grain, a tendency to *inflammation* is produced in the uterus, which, during gestation, is the most irritable point in the system. Nature has no other way to relieve herself of this danger to the life of the mother, when the meal and grain continue to flow in, than to prevent inflammation of the womb, and death, by evacuating the contents of the uterus. The increasing irritability of that organ, excites its repeated contractions, as at the full period, and abortion results, and the mother is saved at the expense of the young. If the young is carried to maturity, it survives, and the mother dies of inflammation of the womb."

Ulceration or lesion of the epithelium and the enlargement of the mucous follicles, as the second cause of abortion, depends somewhat upon the situation of the placenta. If high up at the fundus of the uterus, unless the abortion be effected early, the current of blood is remote from the abraded surface, which is either healed by this derivative or remains *in statu quo*. Should the placenta be inserted lower down, the tendency to bleed is much greater and abortion more probable.

In the great majority of cases of abortion at the completion of a certain period, there is fissure of the os uteri.

If we take the description of the changes of the os uteri during gestation, as formerly believed and as still described in the books, we shall not be so well able to account for the fact that a fissure of the os produces abortion. But we take that given and demonstrated by M. Stolz, in 1826, and which has now received the sanction of the most eminent physiologists and pathologists. These views have recently been plainly expressed by L. Shanks, M.D., Professor at Memphis Medical College, whose words I will borrow.

"The description of these changes, as furnished in most of the books, is, that in the progress of gestation to term, the neck spreads out at its upper part, so as to aid in the enlargement of the womb, and thus, by expanding from above downwards, the neck becomes shortened, until at the end of the ninth month, it is merged in the ovoid form of the womb, leaving only a ring of variable thickness. Instead of this being the true anatomical change, which takes place in the progress of gestation, it is found, from careful examinations, that this description is entirely erroneous. For a proper understanding of the diseases of the uterus, I have already attached much importance to a correct knowledge of the anatomy of the neck and the body, and especially of their respective cavities in the normal, undeveloped state.

"The length of the cavity of the neck being generally about a third greater than that of the body, and in the healthy, undeveloped state, having its internal opening so closed by the contraction of the circular fibres, as to make it somewhat difficult to pass a medium-sized sound through it, into the cavity of the body. According to the description of M. Stolz, which is now fully confirmed, instead of this internal opening of the neck expanding, and the superior part spreading out downwards during gestation, the reverse of this takes place. Early in pregnancy, the os and lower part of the neck begin to soften. This softening gradually extends upward, though less rapidly, in primiparæ cases. As the ramollisement extends from the os upwards, the os and neck expand in multiparæ cases, though in primiparæ cases the cavity of the neck expands without a corresponding patulence of the os, which gives the neck a spindle shape. The cervix loses but little, if any, of its length. By the seventh month, the intra-vaginal portion of the neck has undergone this change, being softened, and the os so dilated in women who have been mothers, as to admit readily the first phalanx of the index finger. This ramollisement and expansion of the cervix progresses upwards, so that a few days before full time, in its proper course, the circular fibres, closing the internal opening of the neck, become softened, and it dilates."

It is not necessary or appropriate to follow this interesting description farther, in its method of accounting for the cause of

labor commencing, a theory far more plausible than any of those formerly given, in the vain attempt to reconcile facts with the erroneous theories of the day. Sufficient for us at the present time has been given, proving that the change in the os uteri commences at the external os, and not at the internal os.

Now we know that the vast majority of cases where fissure of the os exists, not only does it commence at the inferior extremity of the cervix uteri, but that in far the greater number it is confined to that portion.

With this fact before us, and the knowledge that this same portion of the cervix, in the progress of gestation, first commences to soften and contract, we may easily see the heretofore unaccountable cause for numerous abortions. The softening renders the already irritated portion, to the vessels of which an unusual activity has been imparted, still more vascular. The subsequent contraction draws apart the sides of the fissure, exposes the orifices of the various vessels, a slight hæmorrhage ensues, which gradually increases, till the life of the germ is destroyed, or the bleeding becomes so profuse as to stimulate the uterus to the expulsion of its contents, or to endanger the life of the mother. An abundance of such cases are given by Gooch, Dewees, and other writers, styled by them "irritable uterus," but in which the pathological changes were most undoubtedly such as have been here described. This is not a fanciful theory, for which we seek for facts to substantiate, but, on the contrary, it is one deduced from facts. Numerous cases have occurred in my own practice, and in those of my friends, which I have been called to see in consultation.

A few marked cases only will I relate, in a very brief manner, as illustrative. A lady, about thirty years of age, was confined with her first child at full time, after a very severe labor of some days duration. I saw her two years after, when she stated that she had never enjoyed a well day subsequently to this confinement. That she had nursed her infant about a year, constantly troubled by pain and weakness in the back and loins, accompanied by a more or less profuse leucorrhœa. That latterly she had been much debilitated by repeated abortions, occurring from about the second or third month of pregnancy. They commenced by slight bleedings, increasing to a profuse

hæmorrhage, threatening her life. Vaginal digital examination discovered a marked prolapsus of the uterus when erect, but which subsided when in the recumbent position: the cervix immensely hypertrophied and ragged. A better investigation with the speculum disclosed the os, so immense as to be scarcely admitted between the fully distended blades of a four-bladed Ricord, divided into three irregular-sized lobes, the edges of which were covered with profuse unhealthy granulations, the whole surface denuded of epithelium, and the entire organ bathed in a profusion of the muco-purulent secretion usually accompanying these lesions. The case was a plain one. The os had been torn in those places at the first labor, and these lacerations, never healed, were a constant source of irritation, and, when pregnant, the undoubted cause of all the abortions, subsequent.

I will mention but one more case further to substantiate the view which I have taken of this form of abortion. I lay more stress upon it, because these cases have been one of the opprobria of medicine; and having, as I think, given a conclusive proof of the theoretical cause of these affections, I wish now, by some cases plainly showing the facts, as sustaining the theory, and from which I have educed the theory, to convince all of the correctness of this view, and to lead to a reformation in the past and present palliative and temporizing method of treatment. In the vast majority of these cases of irritable uterus, in nine out of ten, where there exists this periodical tendency to abortion, cure is not only possible, but if the treatment proper for the affection be employed, the cure is as certain as may be predicted in any disease that exists. If, however, the eyes are to be closed and the ear shut to the facts which the advance of science has revealed,—if, supine in our conservatism, we join with the blind old foggy-ism in their empty denunciation of the speculum uteri, and its immense utility in these affections,—dogs in the manger, we neither use it ourselves, nor permit others so to do,—worse than the most arrant quackery, which always proposes something new, and thereby sometimes ignorantly benefits, we are content with the ashes of the past, instead of seeking for living fire in the present; if thus contented in our partial acquirement, there is henceforth no

advance in science, and the unnecessary sufferings of millions remain unmitigated, unassuaged.

But my object is not to attempt to convince those "who, seeing see not; and hearing hear not, neither do they understand," but merely to state my own views, in all simplicity, and some of the facts upon which they are founded.

A most instructive case, to which I refer in consideration of several views to be made in this paper, is the last reported by myself in the *American Medical Monthly* for October, 1854, entitled "*Fifteen Selected Cases of Operative Midwifery.*" After two confinements at full time, the lady experienced a slight jar in stepping from her carriage. She was daily expecting her third confinement. Pains soon came on. She was speedily confined with a dead child. Two years subsequent she aborted at about the third month. This commenced with a slight discharge of bloody mucus, which was supposed by her medical attendant, and myself, to arise from fissures of the os, and the next day was appointed for making an examination, but before that time arrived she had aborted, and her life was in great jeopardy. When sufficiently recovered, some weeks after, from the excessive hæmorrhage, to which reference will be subsequently made, her physician found, upon examination by the speculum, not only the local congestion to be expected after so recent a confinement, but induration, and fissures apparently of long standing, and quite sufficient to account for all the difficulty she had experienced.

I might quote scores of similar cases from experience in the Northern Dispensary, in the class of Diseases of Females, and I am entirely convinced in my opinion of the origin of the hitherto unknown or unsuspected causes of numerous abortions, as proceeding from local disease of the womb, and not to be described under the names of "irritable uterus," or any other vague and unsatisfactory appellation.

Leaving this very important class of cases but barely alluded to, and imperfectly illustrated, I proceed to discuss that form of *uterine hæmorrhage which springs from within the cavity of the uterus*, existing in cases both before and at full time, where

the blood proceeds from a partial or complete detachment of the placenta. This accident occurs most frequently where there is placenta prævia, where the placenta is placed partially or centrally over the os uteri. The method of the obliteration of the cervix, as I have described, from the inferior os, and not vice versa, accounts for the rare cases of hæmorrhage before full time, which we should suppose more frequent than it has been found to be, were the absorption in the contrary direction. In 1853, I exhibited to the students at the College of Physicians and Surgeons, an ovum of six months, with the membranes intact, where the placenta was completely over the os, and was detached and born anterior to the child. There was constant hæmorrhage in this case for two days before its delivery. These cases are not unfrequent, particularly at full time.

I was recently called in consultation in a case of labor at full time, where the woman was rapidly sinking, pulse very fresh, and 180 or 190—too rapid to be distinctly counted—when I was informed there was a rupture of the womb, but which symptoms I discovered to be solely attributable to a detachment of the placenta and profuse internal concealed hæmorrhage, and the child dead, therefrom, probably.

Mrs. L——, some two years since, was pregnant at the seventh month, and, with the exception of being much troubled with nausea, was, though delicate, in pretty good health, and had taken a short walk in the morning. While sitting at tea, late in the evening, she felt a flow, which was discovered to be bloody, and immediately sent for me. It was her first child, and the discharge was very profuse. I supposed that the membranes had ruptured, and the waters colored with blood made the very profuse quantity observable during the three or four hours subsequently. Examination evinced very great tenderness of the os uteri, which, however, did not admit the finger. This flow continued with great profusion until the lady complained of singing in her ears and motes in her vision. A fresh examination discovered the membranes intact. The source of this very great hæmorrhage was not known till within a few weeks, and subsequent to another labor at full time, and without any unpleasant symptom. A speculum examination for leucorrhœa, and pain and weakness in the back and loins, dis-

covered the same tenderness of the os,—persistent since the first miscarriage,—congestion and hypertrophy.

THE TREATMENT of these cases is of two characters, viz.: the immediate hæmorrhage; and secondly, for the cure of the causes of the hæmorrhage.

When called early to a case of threatened miscarriage, when the hæmorrhage is slight, and the symptoms indicate its local character, from ulceration or fissure of the os, a speculum examination should be immediately instituted, and the parts, if found in this condition, cauterized by nitras argenti, thus temporarily arresting the hæmorrhage, and the uterine plethora allayed by general bleeding, and the excitement quieted by an anodyne. Should this treatment be effectual, the disease of the os should be subsequently treated by local applications, until the parts are restored to their normal condition.

If, however, the hæmorrhage was not the primary symptom, or if the abortion was threatened in consequence of some fatigue, great exertion, or excitement, where there may be a debilitated condition of the uterus, which, in its relaxed state, opens the os, or in some way diminishes the circulation, and impairs its vital functions, I have found great benefit from the tonic effects produced by small doses of *secale cornutum*. The slight contraction consequent upon its action, closing the bleeding orifices, and frequently entirely arresting all further discharge and difficulty. This point I have already fully stated, with cases illustrative, in an article entitled, *An Essay on Ergot, with New Views of its Therapeutic Action*; published in the *New York Journal of Medicine* for September, 1853.

The bleeding, in the cases I have mentioned, will rarely, if ever, be so great as to endanger life. If, however, in a case where the origin of the flow is doubtful, it amount to any considerable quantity, the result will be to dilate the os, so that the finger may determine whether there be *placenta prævia*. If so, we should temporize, by resorting to perfect rest, external and internal applications of ice, alum internally,—a large piece passed into the vagina, and placed near the os uteri. These means will sometimes arrest the flow, to be repeated again at some future time. If, however, the patient be at the full time,

or the miscarriage cannot be prevented, the next duty is to rupture the membranes, either through the presenting placenta by a small puncture, or, what is preferable when the placenta but partially covers the os, through the membranes at one side. Ergot should then be given in sufficient quantities to keep up a continued contraction of the uterus, and to thus force the presenting portion of the child firmly down upon the bleeding surface, and thus to dam up the flowing stream. In this manner the head forms a natural tampon. If this be not successful, manual interference must be had recourse to, and the hand passed through or by the side of the placenta, and the child turned and delivered as speedily as may be. In some cases the vaginal tampon may be found advantageous, but rarely in this form of trouble, when the child be *à termé!* and in general it will be found but a temporizing method of doubtful utility.

When, by any accident, we have a detached placenta, the case is indeed a grave and startling one, calling for great decision and promptness of action. It resembles rupture of the uterus, in many of its symptoms, and is often extremely hard to diagnosticate. The fluttering pulse, anxiety of countenance, restlessness, retrocession of the presenting portion, exist, as in rupture. In general, however, the pear shape of the uterus is retained. Fortunately, the duty of the accoucheur is alike in each case. Immediate delivery is imperative. From the prostration from the loss of blood, there is no rigidity of the os to interfere with the introduction of the hand, and the immediate delivery by turning may be effected, if the head has so far retreated as to prevent the delivery by the forceps. I have seen but a few cases of this form of difficulty, and speak, therefore, from a limited experience. There seems, however, to be no other feasible manner of operating when these appalling accidents occur.

Having spoken of *hæmorrhage* before delivery, I come now to describe that *occurring after the birth of the child*. This I divide into two classes, the first ending with the delivery of the placenta, and the second embracing the floodings after the placenta has been expelled. In these two classes are embraced the hæmorrhages most commonly found in practice.

There are a small number of females who are peculiarly liable to flooding, and who always commence to flood as soon as the child is born. There seems to be with them some peculiar nervous distribution to the uterus, which prevents this organ from immediately responding to its new condition. The pains have been powerful and effectual, for a longer or a shorter time, till the child has been expelled. Up to this period there seems to be no want of contractibility in the organ, and as the head advances, and the child is expelled from the cavity of the womb, the womb contracts upon it, and is gradually diminished in size. How is the case usually conducted in practice? As soon as the head is expelled, the anxious attendant begins to fear that every moment the hæmorrhage will commence, and impetuously seizes upon the expelled portion and pulls away for dear life, although without much regard for the life of the child, from the danger of rupturing the ligaments of the cervical vetebrae and the spinal cord. In great haste, therefore, the child is extracted, and sure enough, the hæmorrhage commences just as was expected, and the physician congratulates himself that the child is out of the way. But the placenta is still there, and this he also forcibly delivers. Still the hæmorrhage continues, and the case soon becomes one of great peril to the mother, anxiety to the physician, and horror to the surrounding friends.

The cause of all this, is the bad practice of the attending physician, in very many cases.

The labor went on well enough as long as it was left to itself. Then why not continue? "Meddlesome midwifery" does not mean solely in applying forceps, using the vectis and Smellie's scissors. On the contrary, there is more "meddlesome midwifery" in the practice of many gentlemen who never touch an instrument. It is especially illustrated in the case just narrated, not solely from imagination; for such practice I have myself seen and heard of.

The uterine contractions and diminution in volume, as I have before stated, goes on regularly so long as the child advances toward birth, and as the head passes through the superior, middle, and inferior straits. While it rests upon the perineum, and even when entirely expelled, we have no flooding. How then shall we proceed to continue this desir-

able state of things? And this is the great point to be especially noted in the treatment of these cases. IMITATE NATURE, *as she has already manifested herself*, or rather, LET NATURE ALONE. Instead of frantically seizing hold of the head and pulling like a madman, sit down quietly and wait for nature to finish a work she is abundantly able to perform, and which she has so far ably and effectually accomplished. From some idiosyncrasy the uterus is unable to effect a *speedy* contraction, and time is necessary. Let it take its own time, and yours likewise. Patiently wait, not only till nature has expelled the shoulders, but the hips also, and do not think of lending a finger's strength toward completing the delivery, so long as any portion of the child remains within the uterus. Every one knows that it has long been recommended to introduce the hand into the uterus to arrest flooding, by the stimulus of its presence. Does not the body or legs of the child do this work as effectually as the hand of the accoucheur?

In this method I have treated very many cases. One lady, several times confined in England, and once by the late Dr. J. Kearny Rodgers, I delivered soon after the regretted decease of that gentleman. In every confinement she had bled profusely. At this labor everything was prepared for a similar scene of doubt and danger. I administered a half ounce of the tinct. of ergot as soon as the head pressed upon the perineum. It was soon expelled. I then repeated the dose, and in from ten to fifteen minutes the uterus itself, by repeated contractions, expelled the child in safety, and not a gill of blood was lost.

Dr. Isaac E. Taylor related a case to me in which he was called in consultation, very similar to this, where in several previous labors the hæmorrhage had been profuse. He arrested the attending physician in his desire to deliver the child immediately, and suffered *forty minutes* to elapse after the head was delivered before the whole child was taken away from the mother. The child was purple in color from the influx of blood into the head and from a temporary asphyxia, but subsequently did well, while the mother had no flooding of any account,—the perineum only showing a slight flow, not amounting to a hæmorrhage.

Sometimes, however, the energetic, spasmodic action of the uterus does not permit the delay, giving no time for the uterus to contract firmly upon itself. In the case of the wife of a member of the Academy, who flooded after every labor to a really frightful extent, the uterus violently contracted until the child was completely expelled, and then relapsed into a state of inertia, accompanied by most profuse hæmorrhage.

It is the duty, therefore, in all cases, to do as little as possible to assist the delivery in this last stage, and particularly when subsequent flooding is to be expected.

In cases of abortion, when the means already proposed in such cases do not arrest the abortive action, if the flow of blood be great, it is advisable to give large and repeated doses of the secale cornutum, in order not only to stimulate the uterus to a more speedy discharge of its contents, but also to press the foetal head, or presenting portion, strongly against the opening os uteri, and thus to act as an internal plug. Should, however, the flow be excessive, in addition to this treatment it may be advisable to tampon the vagina. This may the more appropriately be done early in the flow, when the firm and slightly dilated os uteri evinces that some time must elapse before the contents can be expelled. In these cases it may frequently be well to pass a piece of alum into the vagina before using the tampon, to assist in the coagulation.

It should be remembered that the bleeding in these cases is especially efficient in relaxing the cervix, often a tedious and painful process, and that the hæmorrhage to be particularly dreaded, arises in an after period from the retained placenta, of which I shall speak in its proper connection.

I, not unfrequently, as the head passes the vulva, and particularly when there is any fear of flooding, give a half ounce of the tinct. secale cornutum, as a precaution against flooding, and not as an adjuvant to the labor. The alcohol acts as a general stimulant, and the ergot tends to ensure a permanent contraction of the uterus.

When the child is delivered, then, not unfrequently, a flow commences from the placenta, which is more or less detached from the uterus. The first aim is to secure uterine contractions. It is worse than useless to deliver the placenta, if this is not

effected ; for if this is done, instead of a few sinuses left open and bleeding, there remain those of the whole placental surface, and the flow is thereby very much increased.

The uterine action should be excited by the administration of ergot in full doses ; (I have, not unfrequently, given $\mathfrak{z}\text{vj}$. of the tincture in the course of an hour, and from which no injurious effect can be expected ;) by firmly grasping the uterus through the parietes of the abdomen ; abdominal frictions ; ice to the abdomen, alternated with cloths wrung out of hot water ; the cold and hot douche alternated : these, one or all, will soon produce a temporary, if not permanent, contraction. During this period the placenta should be delivered. If requisite, the hand should be introduced, and the placenta seized, and, with as little force as possible, removed. The uterus should be suffered to do this action by its own expulsive force.

There is much said about placentas being attached to the uterus, adherent placentas, &c. While I am far from doubting this condition of things to sometimes occur, (as in the case of a woman kicked in the side, by name Cornetty, at the Boston Poor-House, in 1844,) I am inclined to think it a rare occurrence. Every placenta is adherent, and I defy any one, in an uterus at its full distention, to peel one off from the uterine walls. The placenta is always adherent until the uterine contraction slides the uterus away from its surface, leaving it free. When, therefore, the hand is introduced and an "adherent placenta" is discovered, it is but another method of stating that the uterus is found but partially, or not sufficiently contracted to have detached the placenta.

The texture of the placenta is of various characters. Sometimes we have one firm and tough. These can be torn off, with sufficient force, provided a border or an edge be found detached upon which to lay hold, or the uterus may be excited. Sometimes they are soft and pliable, when they are easily torn in pieces. Occasionally a small portion remains attached to the sinuses of the uterus, too small for the uterus to act upon as a foreign-body. Great injury has, not unfrequently, been done, by attempting to detach this insignificant portion, under the idea of present hæmorrhage and future inflammation to ensue from its presence. The fact is, that in such a case no blood

flows through the placenta, for the character is so changed as not to be able to perform this office. Indeed, I do not think there are many who imagine that a hæmorrhage from the placenta ever occurs,* but from the uterine walls, from which the placenta has been removed:—no blood can flow from the uterine sinuses, for they are firmly plugged by this remaining piece of placenta, so firmly that the plug cannot be easily removed; no hæmorrhage can, therefore, ensue, unless it be from the neighboring sinuses left patulous by the removed portions of the placenta. But if the remaining piece is small, it cannot interfere with the contraction, which will close up the open-mouthed vessels, and thus there will no bleeding ensue from the presence of this small portion remaining.

The only ill result that can therefore occur will be subsequent inflammation. In general this small portion will speedily be detached and discharged by the after-pains—at any rate it cannot be considered to be so fruitful a cause of subsequent inflammation as the forcible attempts to remove it.

It is frequently very difficult to know whether or not the whole placenta is delivered. From the irregular contraction of the uterus there frequently appears to be a portion remaining, when in reality the suspected part is the internal surface of the uterus, somewhat rough where the placenta had been attached. In the case of a lady, to whom I was called at the request of the attending physician, a few months since, confined with a premature five months child, the os was rigid five minutes before the child was expelled. It suddenly opened, expelled the fœtus, and as suddenly closed, retaining the placenta within. When I saw her, the after-birth was partially delivered, in a mangled state, and when I removed the remainder (with much difficulty passing my hand within the cavity of the uterus), it was impossible to say whether it was all delivered or not. Interiorly the sensation to the hand indicated that a portion remained, but I concluded that it was but a part of the uterine surface, and I let it alone; the hæmorrhage ceased, and no inflammation occurred, as undoubtedly there would had I attempted to remove this real or supposed portion.

* Vide Dr. M'Kenzie's paper before the London Medical Society, Dec. 17, 1853.

This state of things is of not unfrequent occurrence in abortions and miscarriages. The uterine efforts force through the firm and imperfectly dilated os, the yielding fœtus, adapted by its shape to make an easy exit. When this occurs, the placenta is very generally left behind. Its broad, flaccid mass, resists the attempts of nature, not only to dislodge it, but to force it through the rigid and narrow opening. It, however, not unfrequently succeeds, so far as to separate a portion from its uterine surface, and thus to cause a continued hæmorrhage. The feeble cord is, in the vain attempt to remove it, broken off, and the protruding membranes offer but a feeble hold by which to extract the bulky placenta.

In these cases, it is generally recommended to securely tampon the vagina, and to trust to time for the result. The action is the formation of a clot, thus arresting further hæmorrhage, and the leaving the placenta, either to be expelled from the uterus by the further softening and enlargement of the os uteri, assisted by the normal contractions of the uterus, or assisted by ergot; or to be decomposed, and thus flow away, or be absorbed.

It may readily be seen that there are many risks to which the patient is exposed, from this treatment. First, the clot intended to restrain further flow, will not be formed until the cavity of the vagina [which is always, no matter how thoroughly plugged, capable of containing more or less blood, perhaps an ounce or two only, but still enough to be often worthy of serious consideration,] is filled. Next, the cavity of the uterus will, not unfrequently, continue to receive blood, and often to a very great amount,—the uterus may be considered capable of expanding to the size to which it had attained when the labor commenced. In an abortion at two or three months, this quantity will not be very large; but if the patient has previously lost any considerable amount, this is deserving of especial attention.

The tampon, therefore, is to be considered a very valuable means of arresting hæmorrhage, in cases of abortion when the patient has not previously flooded, but one of doubtful utility if the hæmorrhage has been profuse, and rarely if ever to be used in any form of hæmorrhage at or near the full time, after

the child has been delivered. From the very fact of the tampon shutting the vagina, we are prevented from ascertaining the actual condition of things from time to time, and the result is an entire ignorance whether the continued prostration, the occasional faint feelings, dizziness in the head, *tinnitus aurium*, &c., be caused by a continued hæmorrhage, or be but the results of the derangement of the circulation, from the previous great loss of blood, or nervous irritability.

The subsequent ill results from the use of the tampon need not here be enlarged upon. It is only necessary to allude to the uncertainty attending its final removal, and the fear of irritation or inflammation attending its too long use; the danger of renewed hæmorrhage from its too speedy removal; the liability of uterine inflammation from the presence of a foreign body, the placenta and clot in the uterus; the chance of phlebitis from the absorption of pus, &c.

It is on this account that writers and practical men of late years have urged the immediate removal of the placenta. In abortions and miscarriages at an early period, generally there is little fear of a want of uterine contraction following. It is not the danger arising from this plan, but the difficulty of effecting it, that has prevented its general adoption.

How shall the small and fragile placenta be seized hold of and withdrawn? Some have recommended the introduction of one finger into the uterus, and bringing down one edge of the placenta, and twisting it round and round, not only thus to detach the entire mass, but to also so shape it that it may the more easily pass through the os. Where this can be done, by all means do it! But it should be remembered that in the great mass of cases, it is impossible to reach the os so as to pass one finger into its cavity, far less to effect any good result, if it arrive there, to say nothing of the utter impossibility of aiding the finger with the thumb of the same hand.

I have, however, effected the desired result, as already reported,* in one case, by passing a small pair of polypus forceps through the os, and thus seizing the placenta, twisting it round, and by one or more operations of this sort completely

* *American Medical Monthly*, September, 1854.

detaching it and bringing it away. This operation I conceive to be the true method of treating these cases, particularly those in which a few more ounces of blood are to be feared as liable to be fatal. The tampon may be used if early applied, and where the pregnancy had not advanced more than three or four months, but never afterward, unless as a temporary resort, while fitting instruments were obtained.

In cases of flooding at or near full time, when the afterbirth is retained, I have said that after uterine contractions are obtained, the placenta should be speedily delivered, and if necessary, by introducing the hand. When the hand is introduced, especially if cold, uterine action will take place, very generally. But it should be especially remembered that the placenta is not to be violently torn from the uterus, and removed, unless there be uterine action sufficient to indicate to the operator that the uterus does and will fully contract, lest by so doing new sinuses be laid open, and fresh and increased bleeding be the result. Neither should the hand be removed until the uterus contracts down upon it as it recedes.

Some operators have recommended that a fresh lemon be introduced with the hand, and crushed within the cavity of the uterus, that its acid might act as a local stimulant. Others advise the injection of a large quantity of cold water. I have never personally used either of them, but while I may allow them merit as adjuvants, they cannot be used to the neglect of the plans and treatment I have already stated. I give it with the more confidence, from the fact that, although having had some experience in troubles of this character, I have never had a patient die, either from the immediate or subsequent effects of hæmorrhage from the uterus, accompanying labor.

Whether, therefore, the hæmorrhage proceeds from the placenta,—as a very few state,—or from the uterine walls, from which it has been torn,—as is the general opinion,—the facts observed by Dr. Mackenzie and others, in their experience, and in experimentation upon the lower animals, all unite in the propriety, aye, the absolute necessity, of removing the placenta. To this I have added some important points, as they seem to me, to guide in performing this serious operation.

But the hæmorrhage is not always arrested by this delivery of the placenta, and sometimes, when this is effected naturally, the hæmorrhage commences for the first time,—how is this to occur, and how shall we meet its exigencies?

It occurs either from a want of, or an irregularity in the character of, the uterine contraction, in the first place, and secondly, from a mechanical impediment to the closing of the uterus, and a consequent hæmorrhage from the patent mouths of the uterine vessels.

The uterus, not unfrequently, seems to have lost its power, and is unable at once to contract persistently and effectually. Its nervous energy is wanting. One seizes it with the hand through the abdominal walls, and it is hard and like a ball under the grasp, but in a few moments it is felt getting softer and softer, and finally the firm mass is not to be found. It seems to have eluded the grasp, but it has only dilated again, again by more external irritation to recontract. But with every dilation its cavity is filled with blood, and with every contraction the gush is perceptible externally! Whence is this? And what is to be done?

Sometimes a firm contraction is felt, and yet the hæmorrhage continues. This may arise from the hourglass contraction, which occurs alike after the placenta is delivered as before.

This irregularity of contraction is developed in different localities; more frequently, indeed, does it occur from the abnormal action of the circular fibres of the uterus, which, by their exclusive operation, cause that form known as the hourglass; but this same irregularity is manifested also upon the portion below and upon the neck, and thus causing a concealed internal hæmorrhage, by the flow of blood being thus prevented from escaping externally and being perceptible. This form is particularly dangerous, on account of its subtle progress,—not unfrequently the patient is dead before anything is known of it.

In December, 1852, I delivered Mrs. Mason with forceps of a living child, and she was safely put to bed, and I remained with her about an hour. Happening to pass by about an hour afterward, I found that she was complaining of a disturbance of vision, and of hearing water boiling. I was informed that

she had not had the least bloody discharge, and that these symptoms had come on after a slight vomiting. On examining the abdomen, the uterus was found much distended, as was afterward known, with clots of blood. This was properly attended to, and she subsequently had no further hæmorrhage.—Many similar cases might be mentioned, for they are sufficiently common to have been noted by every practitioner.

It remains now for me to mention the remaining species of uterine hæmorrhage, and that is where this is kept up from the presence of a mechanical impediment to the contraction of the uterus. This occurs in the following manner :—

When the placenta is expelled from the uterus, some small clots remain, and the uterus not being immediately contracted, the flow continues until a considerable clot fills the cavity of the uterus. When once this occurs, it is almost impossible for any amount of uterine contraction to expel it. It is not a plain, round, smooth mass, but its surface is closely adherent to the uterine parietes. Every one has seen with how much force the blood drawn into a bowl adheres to it, so that the vessel may be everted without disturbing its contents. This adherence is equally strong to the uterine parietes, and far more extensive. In addition to this, upon the surface to which the placenta was attached, the clot is prolonged into the uterine sinuses, constituting so many firm bonds of adhesion. The strength of this clot is only fully appreciated by those who have attempted to remove them.

Now in all these forms of hæmorrhage, occurring after the delivery of the placenta, but one course of *treatment* is called for. The hand should be passed into the uterus. In the first place its introduction will overcome any irregular contraction, for it should be passed through the hourglass, or any other irregular contraction, until it arrives at the fundus. Next, its presence as a foreign body will stimulate the uterus to expel it, and by so doing effect the desired result. Finally, with the hand we should break up the clots, and sweep them all out of the uterus and vagina. The uterus will then contract down to its proper size. It is then to be retained in that position, by

the hand external to the abdomen, by the administration of ergot, &c.

The importance of this method of treatment is not generally acknowledged by practitioners, especially in the last form of hæmorrhage mentioned. Many hesitate upon breaking up these clots, which must be done again and again, as fast as they may form. It appears to many that a clot always serves to arrest a hæmorrhage, and so it does in perhaps every instance except in the hæmorrhage from the uterus after the delivery of the placenta. In this case, as I have attempted already to show, the bulk distends the uterus, and thereby forces open the uterine vessels which are closed, by withdrawing the clot, and the consequent contraction. It should be remembered, and it is generally lost sight of, by the physician, in his anxiety that the patient is as thoroughly bled, whether the blood be drawn into a bowl, is received into the bed clothes around her, or is clotted in the cavity of the uterus.

A most marked instance of the great importance of this method of treatment, occurred in a case in which I had been called in consultation, in consequence of some difficulty occurring in a breech presentation at a first delivery. The patient, a young woman, had been long ill, with intermittent fever, had an enlarged spleen, &c., and was delivered of twins, both breech presentations. Some ten minutes after the labor was finished, and she had been carefully bandaged, &c., our attention was particularly drawn by a sudden vomiting, almost coincident with which a gush of blood from the vagina was heard. Ergot was given, cold applied to the abdomen, and contractions brought on to such a degree that the uterus was hard and firm under the hand, but larger than when it had contained the placenta. The contraction continued persistent; still she was faint, almost pulseless, covered with a cold sweat, and at intervals much worse. It was evident that the hæmorrhage was continuing internally, although none escaped. But one duty remained. Introducing the hand I swept out every clot, the uterus contracted to a proper size, no further hæmorrhage ensued, and the patient was saved, who, by any other mode of treatment, would have been lost.

In the remarks already made, it will be seen that I have omitted to speak of many methods of assistance usually enumerated, and this is because they are only adjuvants, perhaps of some little value in connection with other treatment, but not to be attended to to the neglect of the means already dilated upon. I will mention two of them. The bandage applied to the abdomen; compression of the descending aorta.

The bandage, or roller, applied generally after labor, is very often productive of more injury than benefit. In cases of severe flooding, it is generally inadmissible, and for the simple reason that it is in the way. Its presence prevents the manipulation of the abdomen, the application of ice, the douche, &c., and prevents the attendant from obtaining the very important information of the presence or absence of uterine contractions. There are some who hasten to put on the bandage after delivery, as if the life of the patient depended upon it. Nature puts no bandage upon the cow, or the sheep, and in the Lying-In Hospitals of Paris, the midwives put none on the women. The cows and sheep have no hæmorrhage, and out of some seven hundred women that I saw confined at l'hôpital des Cliniques, under the charge of Dubois, I did not see one solitary case of flooding.

A woman, after confinement, needs a bandage just as much, or rather, upon the same principles, that guide its use in case of tapping for ascites. After all danger of hæmorrhage is passed, a bandage may be applied for support to the abdomen.

When properly done, it should be about half a yard wide, and applied much lower down than usual, the first pin should be placed at the lowest border, near the commencement of the upper third of the thigh. Over the uterus the pressure should not be great, but tighter above it, so that the result is, that the uterus is rather pressed down than upon.

Sometimes it is desirable to place a pad under the bandage, but this should not be upon the uterus, but above it, so as to prevent the uterus from expanding, while at the same time it affords some pressure upon the descending aorta, immediately before its bifurcation.

Compression of the aorta, is a form of treatment often more

theoretical than practical, and where, from the thin habit of body, it is practical, it is of less value than would be supposed. In the cases where I attempted to put this suggestion in practice, I have found little benefit to flow from it.

New York, 141 East Thirteenth-street, May 1, 1855.



CLINICAL LECTURES
ON SOME OF THE
PRINCIPAL DISEASES OF THE EYE.

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COR. FEL. MED. SOC. OF LONDON.

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AMAUROSIS.

Anatomy and Physiology of the Eye, accommodation of Sight, etc.

GENTLEMEN :—If you noticed the manner in which this patient entered the room, you cannot have failed to observe his exertion of seeking for light, although he was led by his daughter. The widely opened eyelids, the almost angularly high drawn up eyebrows, further the horizontal folds (wrinkles) on the forehead, and the stretched neck holding the head upwards towards the window, are so many evidences of it. His walk, together with the rolling of the eyes, and, more yet, the deviation of the adductor muscles, may give you in some measure a hint for forming, if not the diagnosis, at least an idea of what nature the affection may be. Moreover, a glance at his eyeballs will inform you of an apparently sound state, if you except a slight discoloration in the background of the eyes, which is partly attributable to the natural change which takes place in advanced age,* and is frequently apparent even in middle-aged persons, like this patient, who is forty-nine years old.

But if you inquire into his condition of vision, you learn that he can

* With advanced age the transparent fluids of the eye loose in pellucidity and quantity. They become thicker, the lens becomes planer, more dense, yellowish, opaque, harder or softer, the vitreous humor denser and yellowish, the choroidea paler, and inclines even to ossification, the retina becomes thinner.—[*Lehrbuch der path. Anat., Bock.*]

discern light from darkness, but can neither see you nor perceive an object, excepting its shadow. His own story, as you hear, runs thus: "About two years ago, when driving, one morning, his cart, he observed all objects as if surrounded by clouds, misty and hazy. From that time his eyes grew dimmer and dimmer, until he arrived to this condition in which, since eight months, he sees but the shadow of objects, better in the evening, especially by moonlight, than in the day. He observed floating dots of different shape and form, passing along in different directions. Once in a while he had a shooting pain in his brows and head. He is regular in eating, but having worked hard he found it beneficial to take stimulants."

If you examine the eye as to its sensibility to light, you will find that the irides do not respond to the various degrees of excitement by light, but remain immovable.

The movements of the iris are involuntary, and depend upon the excitement communicated to it by immediate irritation of the oculo-motor, or reflected from the cerebral nerves on the brain, the medulla oblongata, and therefrom on the oculo-motorius, or from an excitement originating in the brain, medulla oblongata, or in that part of the spinal chord which is situated between the first and the third vertebra. The proofs of it are apparent from the fact that the pupil contracts after irritation of the conjunctiva, of the iris itself, and of other parts of the eye. But the light can only produce a contraction of the pupil when the retina is sensitive to its impression, which communicates itself through the means of the optic nerve on to the brain, which latter imparts the impression through the corpora quadrigemina (the central organ of the reflex action of the iris), on the nervus oculo-motorius. Hence the dilatation of the pupil and immobility in paralysis of the retina, even with undisturbed activity of the third pair.

Experiments made on animals prove that the sensation of light is imparted from the retina to the brain, and is reflected from these on the oculo-motory nerves. Mayo, Magendie, and lately Budge, cut through the optic nerve, and having irritated immediately afterwards the end not connected with the brain, found that the diameter of the pupil remained unchanged; but the irritation of the central end of the optic nerve was followed by a contraction of the pupil. The transsection of the oculo-motorius nerves by integrity of the irritated optic nerve, had no effect upon the pupil. Hence it follows that the nervous flow of the optic nerve is directed towards the centre and not the periphery, and that the optic nerve does not cause *directly* the movements of the iris, and that the nervus oculo-motorius is officiating and producing the movements of the iris, and causing its contraction. Amaurosis of one eye proves the same also: the reflected movements are communicated from the sound to the affected eye. The light

does not exert an influence by being thrown on the iris. If no light enters the pupil the same does not change, but contracts or dilates if thrown on the sensitive retina. The movements of the iris are in connection and in some measure dependent upon the power of accommodation. The closer we look at an object the more the pupil contracts, and dilates, on the contrary, the further the observed object is situated.

In the normal condition of the eye, its background appears black, because the quantity of reflected light is too small* to produce a sensation in the retina of the observer's eye. Again, the returning rays having the direction of those which *fall in*, prevent altogether the return of rays from the observed retina into the observer's eye, because they start from the same spot which is occupied by our own (observer's) pupillary image; as no rays return from the pupil which is directed towards a black pupil, it is natural and necessary that the pupil should appear black. Only by the reflection of our cornea, by irregular refraction and diffusion in the observed eye, by defraction on the pupillary margin, by pellucidity of the sclerotica, by the diffused light which falls on other parts from the illumined part of the retina, but chiefly by imperfect accommodation, in which no clear image is formed of our pupil,—some rays of light may return from the background of the eye into our pupil, usually, however, too few to illuminate the pupil; and hence the darkness. A discoloration of the pupil will inform you of some change either in the transparent media, or farther back on the retina, optic nerve, etc.

Although it is evident that these objective and subjective symptoms sufficiently characterize a condition which is called amaurosis, I should not venture to diagnosticate the absence of a cataract without a previous examination by the eye speculum. If you examine by the speculum his left eye, Gentlemen, you see the vessels branching in all directions from the centre of the optic nerve. Those running vertically up and down are larger, whereas the horizontal ones are smaller in size; but the color, as you see, is more a brown red equally diffused, and, more cloudy, and not as in the healthy eye. In the right eye you will have more difficulty in tracing the vessels, although they are in some measure apparent. If you use the positive lens, the branches will appear magnified; with the concave lens, you will observe the cornea and iris diminished, but the vessels enlarged. Of course the focal distance varies with the difference of refractive power of your own eyes. Some of you who are near-sighted will do well to look at it through your own glasses. The transparency of both lenses is apparent, of the vitreous humor in the left eye equally so; but the intransparency of

* Stöllwag Von Carion proved it by mathematical calculations based on optical principles.—*Theorie der Augenspiegel*, Vienna, 1854.

the vitreous humor of the right eye, gives ground for supposition of its altered state. However, there is no complication with a cataract, which we should have observed by this means.

It may be well to recall to your mind before entering upon the nature of this eye disease, affecting more or less, directly or indirectly, the retina, the anatomical construction, and physiological importance of this membrane and its contiguous parts. Neither its anatomy nor its physiology is clearly made out, but enough is known of it to give room for speculations probably near the truth, which some day, with the further developement of our auxiliary sciences and the improvement of means for more accurate researches, may have to give way to other suppositions, and thus prove untenable; the conflicting opinions, however, agree in and admit the *chief* features of its anatomical structure and physiological function. The retina is a nervous sheet, commencing at the entrance of the optic nerve, with which it is continuous, and is expanded within the globe, between the choroid coat and vitreous humor, and, becoming gradually thinner forwards, terminates abruptly at the ora serrata in an undulated margin which is intimately connected on one side with the choroidea, on the other with the hyaloid membrane. The retina is a delicate membrane, almost perfectly clear and transparent* during life and when recent, but whitish and opaque afterward. According to Bowman, to whose indefatigable exertions in anatomico-microscopical researches we are indebted for many correct views on the subject, the retina consists of elements common to the retina with other portions of the nervous system, which are placed *internally* towards the hyaloid surface of the retina; and elements peculiar to the retina, and placed *externally*. The former are :

I. Gray fibres, a continuation of the nerve tubules of the optic nerve from the entrance of which they radiate towards the anterior border of the retina. In the space occupied by the evolution of the gray fibres from the optic nerve, *i. e.* for the area of the inner orifice of the foramen opticum, the other strata constituting the retina do not exist, consequently this spot is insusceptible of stimulation by light, *i. e.* blind. Nerve tubules, such as form the optic nerve, do not exist as a part of the retina; where they enter within the sclerotica they are to be regarded as still the optic nerve in its course to the retina.

II. Gray nervous matter.

III. Caudate nucleated globules.

IV. Agglomerated granules.

* According to Coccius, not perfectly so.

The elements peculiar to the retina are situated externally, and together form the wall known as Jacob's membrane; these are,

- V. Rods arranged vertically in a single series, and,
- VI. Bulbous particles interspersed regularly among the former.

According to Kölliker's recent investigations in all parts of the retina, the following layers may be distinguished from without to within :

1. The *Baccillar Layer*, composed of innumerable rod-like and conical corpuscles, regularly disposed, and reflecting the light strongly. These two elements, the "rods" and "cones," constitute a single layer, which becomes thinner anteriorly. The "rods" are cylindrical, elongated corpuscles in which a larger external end—the proper rod—is to be distinguished from a more slender internal portion—the prolongation or "filament," which is a very delicate process of uniform width throughout, prolonged immediately from the point of the "rod," and extends through the inner half of the Baccillar layer. The "cones" are "rods" which, instead of the filaments, are furnished at their inner extremity with a conical or pyriform body. Each of these "cones" consists of an external thicker and longer, finely-granular extremity, and of a shorter inner portion, in which an elevated, more opaque and brilliant body is enclosed. The "rods" and "cones" are arranged vertically upon the retina like palisades in close apposition, one of their ends being directed towards the choroid, the other towards the granular layer. Close to the macula lutea the "cones" form an almost continuous stratum, so that the "rods" are placed only in single series between them; but more anteriorly they are wider apart.

2. The granular layer, which is composed of opaque granular corpuscles, reflecting the light tolerably strongly; in the greater part of the retina they are disposed in two layers, an outer, thicker, and an inner, thinner.

3. The layer of cineritious cerebral substance, composed of a finely granular matrix.

4. *The Expansion of the Optic Nerve.*—Kölliker has not yet been able to demonstrate axis-fibres and sheaths in the fibres of the retina, although he would not from that circumstance at present conclude that they do not exist. As respects the course of the nerve fibres in the retina this much is certain, that they radiate on all sides from the colliculus nervi optici, and constitute a continuous, membranous expansion, which extends as far as the ora serrata retinæ, and presents any considerable interruption only in the situation of the macula lutea. In this true nervous membrane the fibres are associated into larger and smaller, compressed bundles, which either mutually anastomose at very acute angles, or run for considerable distances parallel

with each other. They exist not only in front but in every part of the retina, because the layer of nerve fibres becomes visibly thicker from before backwards.

5. The limitary membrane, a delicate membrane intimately connected with the rest of the retina. This membrane, which Valentin considers to be an epithelium of the retina, and Hannover an epithelium of the hyaloidea, proceeds over the ora serrata, covering the ciliary processes and the posterior surface of the iris, to the pupillary margin, where it terminates.

The condition of the retinal elements at the "yellow spot" is in many respects peculiar. Any continuous layer of optic fibres is there wholly wanting, and the stratum of nerve cells, which are in close mutual apposition, lies immediately upon the membrana limitans. Between these cells run nerve fibres, from the sides and the internal end of the spot into it, and terminate in a way that cannot be accurately determined. In the centre of the macula lutea there is a *thin, uncolored spot in which the granular layer is wanting*, through which the pigment of the choroid is visible, the so-termed foramen centrale. The plica centralis nerve exists during life; but this is not the case, probably, with the yellow color, which depends upon diffused pigment prevading all the parts of the retina except the "rods." The latter in this situation assume the form of cones exclusively, in as much as the proper "rods" are wholly wanting in the "yellow spot" and its immediate neighborhood. Instead of them, the cones form a perfectly continuous layer, and are more slender than elsewhere.

Children are generally born *without* a macula lutea. The yellowish color forms itself, according to Ammon, fourteen to sixteen months after birth, under the influence of light; and does not form itself if light is shut out, by a leucoma for instance; and turns pale again in advanced age. In dead subjects the macula lutea is found in the plica centralis retinæ, which is a double fold formed after death; by means of the eye-speculum you would recognize it if it existed during life; I myself never could see it during any of the numerous examinations I made with the eye-specula.

Respecting the mutual connection of the nervous retinal layers, Kölliker has ascertained that the fibres proceeding from the "rods" and "cones" inwards, and from the granules on both sides, are connected and simply constitute parts of a fibrous system of the retina. This system, the greater number of whose elements are vertical, penetrates the entire thickness of the tunic, and might be termed the *radiating fibre-system*, in contradistinction to the horizontal, referable to the expansion of the optic nerve. Proceeding from the Baccillar layer, it is obvious that the fine filaments arising from the "rods" and "cones" are directly continuous with the similar processes given off from the external side of the "granules" in such a way that the

filaments of the "rods" are connected with the granules of the outer granular layer, and those of the "cones" with the "granules" of the inner layer; in fact, each "cone" or "rod" is in connection with a granule, the latter also perhaps with several. The radiating fibres either actually terminate in the filaments observed by K  liker on the surface of the expansion of the optic nerve, or they are continuous with the true fibres of that nerve, or at any rate in connection with them. In a physiological point of view, the latter supposition would in any case be the most plausible; and, in support of it, it may be stated that in the true fibrous bundles of the retina, together with the varicose nerves tubules, there are fibres of another sort, which agree in all respects with the radiating fibres. It may be that these fibres are the direct continuations of the horizontal terminal processes of the radiating fibres, which subsequently, in their further progress towards the optic nerve, acquire more and more of the character of nerve tubules, and follow a more direct course.

K  liker looks upon the "rods" and cones, which may also be said to correspond in all chemical characters with the nerve fibres of the retina, and the whole of the radiating fibre system of the retina, as *true nervous elements*; and ventures at the same time to broach the bold supposition, as he expresses himself, founded upon a less established basis, which has been already thrown out, that the "rods" and "cones" are the *true "percipients"* of light, and that they communicate their condition to the fibres of the optic nerve, by means of the direct or indirect connection of their fibrous processes with the former, through which again the impressions are conveyed to the sensorium. That the optic fibres in the nervous expansion of the retina do not perceive light, appears to him to be proved by the circumstance:—

1. That the point of the retina where those fibres alone and no other elements of the retina are found, viz. at the entrance of the optic nerve, is not sensitive to light.

2. That the optic fibres are *superimposed upon each other in such numbers*, in almost every part of the retina, and above all in the neighborhood of the macula lutea, that it is impossible that they should perceive light, inasmuch as each luminous impression, owing to the transparency of the fibres, must in any case always affect many of them, and consequently would of necessity give rise to confused sensations, and;

3. Because the part of the retina in which there is no continuous layer of nerve fibres on the inner surface, that is to say, the "yellow spot" is the most sensitive to luminous impressions. Under this notion the import of the "rods" and their remarkable arrangement would be intelligible, and the almost inexplicable correspondence in the size of the images of the

smallest distinguishable interspaces between two objects with the diameter of the "rods" and "cones," be placed in its true light.

The vessels of the retina are the arteria and vena centralis retinae, which enter in the axis of the optic nerve, the interior of the eye, forming in all directions arborescent ramifications. The branches, however, running upwards and downwards, are thicker than those running horizontally, as I have shown you repeatedly. In the circumference of the macula lutea, the branches form a coronary arch; but the macula lutea seems to be free of the vessels, at least by examining it with the eye-speculum. Kölliker states, that there are numerous capillaries in the "yellow spots." On the ora serrata retinae is situated a circular vein (Gerlach), in which the capillaries situated on the anterior part of the retina inosculate. This vein presents this peculiarity, that only its posterior wall is connected with other vessels, whereas its anterior wall, turned to the zonula Zinii, is perfectly free of it.

This peculiar, independent arrangement of the vessels explains the independence of many inflammations of it, and the abundance of vessels the frequency of congestions, exudations, and extravasations, upon which, as traceable by the eye-speculum, amblyopia, amaurosis, and other defects of sight depend. The choroid coat consists of three different layers;* the outer is made up chiefly of vessels connected by a peculiar kind of connecting tissue (stroma), in which numerous stellular pigment cells are imbedded. A capillary net expanded in a structureless membrane, forms the middle layer, while the innermost (membrana pigmenti), consists of polyhedral pigment cells, in albinos and white rabbits substituted by tessellated epithelial cells. The formation of the pigment begins after birth, and is confined to the stroma choroideæ, therefore all children are born with blue eyes, whereas it extends in brown eyes, on to the ciliary muscle and the stroma of the iris. The different coloration of the iris depends upon the quantity and the distribution of the deposited pigment.

The Ciliary Muscle.

On the outer surface of the choroid, between the same and the sclerotic coat, the ciliary muscle forms a grayish semi-transparent band, about one-eighth of an inch broad. It is thickest in front at its anterior edge, and becomes gradually thinner backwards, terminating in a line with the ora serrata, and corresponds, therefore, on its inner surface, to that striated and

* Gerlach.

plicated part of the choroid in front of the retina, where the choroid takes hold of the vitreous body. The function of this muscle is to adjust the eye to distinct vision at different distances. The manner in which this is effected is, as yet, a disputed point. By contracting it is supposed to draw the lens forwards, to adjust the eye for near objects; while by relaxing it causes the lens to recede, to which movements the elasticity of the parts probably much contribute, and the eye is thus again adjusted as originally, for remote vision.

By many it is called *tensor choroidea*, as its effect is supposed to be the extension of the choroidea with the retina around the vitreous body, diminishing a closed surface, which is formed by the muscle itself, the cornea and the choroid coat; it lifts forward, at the same time, the *zonula Zinnii*, which is connected with the ciliary processes, and diminishes their tension in that region which lies between the lens and the ciliary processes.

In front of the *ora serrata*, the choroid coat exhibits on its internal surface, about two lines and a half from the cornea, a number of longitudinal folds,—the ciliary processes, which are arranged in a radiated manner, and reach the circumference of the lens.

The circular space left by the anterior terminations of the choroid coat, is filled up by the iris (*regenbogenhaut*), which consists of finely spread muscular tissue, covered in front by an epithelium, and connecting numerous vessels, nerves, and pigment. It has a peculiar arrangement of "parallel, larger and smaller," lines and fibres, proceeding from the circumference to the centre (*dilator pupillæ*), where they meet orbicular fibres (*sphincter pupillæ*).

The opening in the middle of this membrane is called the pupil. The function of the iris is to regulate the admission of the quantity of light, and to exclude the dispersed rays and those formed by the spherical aberration of the lens.

The cornea consists of five layers, the external, 1, forms the conjunctival epithelium, which is followed by, 2, an exterior elastic lamina, 3, the cornea proper, 4, a posterior elastic lamina, and 5, by the posterior epithelium, or *membrana descemetii*. The cornea and the *membrana humoris aquæ*, or *descemetii*, both of which are transparent, form a convex-concave, concentrating meniscus; the cornea is fixed into the *sclerotica*, which consists of white fibres, intimately connected with each other.

The refractive media of the eye form a system of lenses, constructed in such a manner as to form on the retina, under favorable circumstances, a defined achromatic image. The highly refractive lens included between two less refractive fluids (aqueous and vitreous humor), form, together with the cornea, the dioptric apparatus of the eyeball.

The Physiology of Sight.

Vision is effected in the normal eye thus: The rays of light passing from a luminous body through the dioptric apparatus of the eye, in a distance commensurate to its refractive power, are refracted in such way as to converge in the interior of the eye, and to meet in a focus on the retina, where it (the luminous body) is depicted upside down.* The image thus formed, if received by a sensitive spot (*macula lutea*), containing cones and rods, the perception of it is transmitted through the fibrous processes to the optic nerve, which conveys it then to the sensorium. The inversion of the image depends on the decussation the rays of light undergo, passing the highly refractive crystalline lens. The unity of vision of two images depicted on the retina, depends upon the decussation of the middle fibres of the optic nerves in the chiasma nervorum opticorum, and a probable simultaneous origin of both optic nerves in the brain. Single vision takes place only if *identical* parts of both retinas are affected by rays of light; while at once double vision occurs if different parts of the retina are affected, as you observe if you alter the optical directions by pressing one eye and looking by both. Identical are the centres of both retinas, as well as the parts equally distant from the centre of one eye outwards, and of the other inwards, or which are situated equally distant above or below the centre of the eye. The convergence of both optical axes in a point of an object which corresponds to the distance of the accommodative power, is a necessary condition to the unity of vision. It may be assumed, without committing a palpable error, that the eye consists of three refractive media, which are separated by nearly spherical surfaces, which have their centres of curvation in the axis of vision. The first medium should be the *cornea* with the *aqueous humor*; the second, the *lens*; the third, the *vitreous body*. According to known optical laws, the rays of light will be refracted to the perpendicular in the first medium; this refraction will be the strongest in the eye because the difference of the density of the atmospheric air and the cornea is greater than the difference of the latter and the subsequent media, and of those amongst each other.† In

* You see in this eye, of which I remove the muscles and fat, the image of the flame I hold before the cornea, inverted on the retina, and diminished, through the transparent sclerotica. You may see the same in the living body; if you hold the candle before the eye of a child, directing the cornea outwards, the image appears inside, shining through the thin conjunctiva.

† That the convexity of the cornea, and the refractive property of the aqueous humor, is of consequence to the function of vision, is evident, even regardless of the physical laws, from the construction of the eyes of land and water animals. The cornea is generally stronger in land animals, the lens less curved than in animals living in

the lens the rays are again refracted to the perpendicular in consequence of the great refractive power of the lens in relation to that of the cornea, whilst the rays diverge again in the less dense aqueous humor. But not all rays falling on the cornea will be transmitted; only those falling within an angle of about 48 degrees. The more oblique rays are reflected, and cause the sparkling appearance of the living eye, which necessarily must be introduced into portraits in order to give them a character of life; some of the reflected rays produce the image behind the cornea. The rays reflected by the cornea strike upon the iris, which shuts out the peripheral ones, which causes the brilliancy of the iris, and admits the central ones. The rays coming from the luminous body are refracted in such a way as to form a cone, the base of which is on the cornea and corresponds to a second cone, the apex of which is on the retina, only its central ray (direction's ray)—which corresponds to the optic axis—passes in an unaltered shape; whereas the others are refracted. The perception which is most distinct in consequence of the situation of the retinal image nearest to the axis of the eye, is called *direct*; whereas that which in consequence of the greater distance of the image from the central point is less distinct, is called *indirect*.

The field of vision includes the extent of the *direct* and *indirect* vision. The extent of the field of vision for the direct vision is determined by the movement of the eyeball in its orbit to all sides without turning the head, in which movement the axis of the globe may be turned in all directions within a segment of a circle of nearly 120 degrees.

Accommodation of Sight.

A distinct image of an object (whose different luminous points should be separately received) can only then be formed on the retina, if the diver-

water; the aqueous humor differing much in density from the air but less from the water, it is natural that a very convex cornea, may much diminish the divergence of a system of rays falling upon it, or even convert it into convergency; while it is immaterial whether the cornea be convex or plane, when the rays passing from water fall upon it, because they can then be refracted, even by a highly curved surface, the difference of the refractive power, in both animals being very small. Animals, therefore, living in water, possess lenses of a high refractive power to effect the necessary degree of refraction; whilst in animals living on land, the greatest refraction takes place on the entrance of the rays through the cornea. The arrangement of the layers of the lens contributes in the latter animals to its great refractive power. Senff has shown that the lens whose nucleus is surrounded by less and less light-refractive layers, altogether refracts the light stronger than if it possessed throughout the high refractive power of the nucleus.

gence of the cone of rays corresponding to each point, after decussation falls exactly on the surface of the retina.

In order that objects in different distances should be distinctly seen, it is necessary that changes should take place in the eye, altering the refraction of the luminous rays, and thus accommodating the eye to the perception of a correct image of objects situated at various distances. That this does take place, you can convince yourself by looking with one eye at the ends of two needles, held separately for a distance, and covering each other: the first will appear clear if you look at it, and the second hazy; whereas the first will appear cloudy if you look at the second needle. The accommodation of sight depends not only upon the exertion of the ciliary muscle by drawing the lens forward, or at the same time making tense the choroid coat and retina, thus diminishing the space circumscribed by the cornea, ciliary muscle, and choridea, but is greatly affected on one hand by the effect of the movements of the iris, and on the other by the external ocular muscles, which, probably by their different combined actions, are capable of altering the diameters of the bulb, thus altering its refractive power. Recent investigations of E. H. Weber, prove the eye *not* to be entirely filled with fluids, which would serve in support of the possibility of a diametrical change. From the circumstance, that in healthy eyes it causes no pain to look at the distance, however long it may last, whereas to look at a nearer object for a time causes considerable exertion, which is followed by fatigue, one might infer the eye originally and naturally, to be accommodated for distances; and really, one comparatively seldom meets with myopic children, a state which develops itself more or less, from the manner of occupation, if the cause be not a congenital error of the highly refractive media.

The altered relation of some parts constituting the interior of the eye, will have as a consequence a difference of their refractive power. If we reflect that according to measurements of Valentin, only a locomotion of one tenth of an inch is sufficient for the lens to accommodate its refractive power from four inches to an endless distance, we can have no difficulty in believing in the possibility of an adaptation by the locomotion of the lens; and, indeed, if you look close at the form of the iris which it assumes when, for instance, this boy or any one else suddenly accommodates his sight to the needle held near his eye, after having accommodated his sight to a distance, you will perceive that the iris assumes a convex shape, as if protruded by the lens or pressed by a voluminous cataract. That the accommodation of sight does not depend wholly upon the ciliary muscle, which has its controlling antagonism not only in the elasticity of the parts, but even in the activity and movements of the ocular muscles, may be proved by the fact that patients operated on for cataract—or, better, after entire removal of the

lens—do retain or regain the power of accommodation in some measure.* The instillation of atropine drops into the eye debilitates the accommodative power for near objects, not only by disturbing the equilibrium of the dil. and sphinct. muscles, thus dilating the pupil, but by impeding the activity of the cil. muscle. That the ocular muscles (rect. and obl.) contribute† to the accommodation of sight, may be proved by the myotomy which in many instances reestablishes the sight immediately after the operations, and often improves it considerably if there existed any. I believe that even the orbicular muscle contributes to it, from the fact that persons in fixing a near object succeed much better in seeing, by compressing the eyeballs *suddenly*, thus diminishing the palpebral aperture, than if this is slowly effected. In such instances it is not the exclusion of the diffused rays of light which corrects the sight, as this would be effected equally by closing the eye gently, but to the alteration of the diameter the closer sight is thus attributable.

A deviation from the normal function of vision marked as an impairment, or the entire loss of sight, not dependent, however, upon intransparency of the cornea, aqueous humor, or lens, is called respectively amblyopia and amaurosis. Amblyopia differs from amaurosis only in the degree of the disturbed function, and both may originate from the same cause. Both may be produced by direct or indirect causes altering the organic structure of the eye and its contiguous parts, the optic nerve, brain, etc., or result from a disturbed function of neighboring or remote organs. The functional disturbance may be followed by or precede the organic change, or both may coëxist. The eye being a repetition of the whole organism, containing all the textures met with in other parts of the body, it is necessarily exposed to all possible organic changes and functional disturbances similar to those met in the body elsewhere. Moreover, as its anatomical construction present a modification of similar textures, and its function being a peculiar one, a disturbance will result from minute causes scarcely worth noticing in other organs. As, however, there exists no strong line of demarcation between many of the causes producing this affection, the result of one cause giving rise to another,* and being combined and associated with each other in

* E. Jaeger, "Ueber Staar und Staaroperationen," 1854, page 115. According to measurement instituted with the streaked scale (Strichscale), a great number of patients operated on for cataract have shown, often even after a few weeks, an accommodation of sight.

† Professor Arlt asserts that it is effected by the tension of the oblique and rect. muscles. When the muscles press the bulbus becomes smaller, the vitreous humor makes room in all directions, chiefly backwards and forwards, the lens cannot advance or the cornea should have to support a greater pressure, the ciliary muscle contracts, the pupil becomes smaller, and hence is effected the retrogression of the vitreous body further.—*Vienna Med. Woch.*, June, 1854.

various ways, a precise and exact division of this affection will not be possible, even if the changed anatomical construction of the eye and neighboring parts, and its disturbed function and that of other organs, should be chosen for a base. It may, however, facilitate you in gaining a general outline of the causes producing the affection, if we retain this latter as the base of a general division. The causes producing amblyopia and amaurosis may be *organic*, *direct*, and *indirect* ones. It may be caused :—

I. By wounds of the orbita and fractures of it. With in the orbita it may be produced by exostosis, hydatids, aneurism, tumors (albuminous, fibrous, sarcomatous, cancerous, etc.) which either compress the retina or the optic nerve, or stretch it by protruding the eyeball, and thus alter the diameter and relative position of the media. It may be induced by thickening of the sheath of the optic nerve extending into the orbita, by inflammation, softening and atrophy of it.

II. Within the eyeball, it may be caused by a congestion of the choroid coat or the retina. This cause, Gentlemen, is a *very frequent* one of amblyopia and amaurosis. It may be produced by inflammation of the choroid coat (mostly partial), and the various causes resulting from it (as paralysis of the ciliary muscles).† It may be produced by localization of the different products on it out of the vessels of the dyscrasic blood in syphilitic, tuberculous individuals, thus infiltrating the parenchyma of the choroid coat, and by subsequent resorption of its fluid constituents leaving more solid and dense parts formed variously and observable by the eye speculum; or, as consequences of retinitis,‡ which may induce it also, induration, softening, atrophy, hypertrophy, ossification, and other changes consequent upon deep-seated inflammations of the eyeball pressing on the convex or concave surface of the choroid coat or retina. Further, it may be induced by aneurism of the central artery of the retina, by apoplexy or obliteration § of it, by con-

* The organic change to the functional disturbance, and *vice versa*.

† Choroideitis is one of the most frequent and most dangerous eye diseases; and probably the cause of amaurosis glaucomatosa, the infl. extends but rarely on the whole extent of the choroidea, and attacks mostly the anterior or posterior part of it: the iris and retina, or one or both, may be affected at the same time. Its product is fibrinous or albuminous.—*V. Hasner*.

‡ *Retinitis* may have as its result a coagulable and organizable exudation, as well as a purulent and sero-plastic one. As a further consequence of such an inflammation, is a permanent enlargement of its vessels, softening (malacia) atrophy of the retina and the optic nerve.—*Lehrbuch der pathologischen Anatomie, Dr. C. E. Bock, 52.*

§ Guthrie and Ammon.

cussions or laceration of the retina, by hydrophthalmus, by an altered state of the hyaloidea in the thickening of it, and by a morbid change of the structure and density of the vitreous body, which is by no means a rare cause, but was less known as such before the use of the eye speculum.

III. Within the skull, it may be produced by depressions attending fractures of the skull, by tumors situated on its internal surface or on the dura mater, and by various other diseases of the head consequent upon inflammations of the brain or its coverings, such as induration, softening, suppuration, tubercles. It may be induced by concussion of the brain produced by gunshot or other wounds of the head, by congestion and enlargement of the cerebral vessels.

Amblyopia and amaurosis may be produced from functional or organic derangement of other remote organs. It is often associated with uterine disturbances, amenorrhœa,* dysmenorrhœa, metrorrhagia. It may be produced by plethora, and by general *anæmia* or its consequences. Amblyopia may be produced by worms in the intestines, or diseases of the alimentary canal, by the irritation of the sympathetic nerve, thus reflecting through the spinal marrow the fibres influencing vision. Amblyopia may be induced by an anomalous quality of blood, as in albuminary hydrops,† where it is almost the first symptom.

All circumstances tending to alter the quality or quantity of blood, and thus depress the constitution, or increase the vitality of some or all organs, may contribute to the development of amblyopia or amaurosis. The same holds good of the nervous system; *i. e.*, circumstances causing increase or diminution of the nervous system, generally or locally, may contribute to the development of the affections under our consideration. The reciprocal reaction of the condition of one system on the other, will naturally influence it. You may perceive by this, that the division of amaurosis is only a conventional one, according to the many divisions existing in the medical science. You can neither bring all under the head of nervous or blood diseases, or both together, nor attribute it always either to local or always to general causes. The combinations of all such causes being manifold, it is evident that a strict division is scarcely possible.

* Prof. Barker informs me that he met, in his private as well as clinical practice, about a dozen of cases of amblyopia and amaurosis as a result of amenorrhœa; many of them improved, and some even were entirely cured, by the establishment or re-establishment of the menstrual courses.

† Landouzy.

Amblyopia and amaurosis may be divided in—

1. Congestive,
2. Erethic, } Congestive.
3. Torpid, }

Amblyopia and Amaurosis in general.

The symptoms of amblyopia and amaurosis are objective and subjective. The objective symptoms are more or less confined to the iris and the state of the pupil, if we abstract from the examination with the eye speculum, which is the most important means of establishing the diagnosis.

The movements of the iris are dependent upon the reflex action of the sensitive and sympathetic nerves on the motory nerve. According to Magendie and Budge, the contraction of the pupil which is consequent upon the influence of light on the retina, has a central organ in the corpus quadrigemina, which stands in relation to the optic nerve and oculo-motorius as the spinal marrow to the sensitive and motory roots of the spinal nerves. With the extirpation of the corpora quadrigemina, contraction of the pupil, through the influence of light on the retina, ceases. The corpora quadrigemina on one side influence the movements of the iris on both sides, so that the extirpation of the corpora quadrigemina on one side, may be followed by movements of the iris produced by the influence of the corpora quadrigemina, on the other side. The dilator pupillæ is provided with branches belonging to the nervus oculo-motorius, whilst the sphincter pupillæ seems to be provided with fibres running in the same way, but not belonging to the oculum, which seem to take their origin separately in the brain; at least, the observation that in paralysis of the oculo-motorius, the pupil may retain its movements, speaks for it. Extirpation of the ciliary ganglion, or destruction of it by disease, causes dilatation and immobility of the pupil. The sensitive nerves providing the eye are the first and second branch of the trigeminus, which not only cause the sensation of all parts of the eye provided by them, but decidedly influence the circulation of the blood, the secretion, the absorption, and the nutritive process of the eye in general.

The sympathetic nerve exerts its influence on the eye chiefly by means of the *ciliary ganglion* and some other branches. The sympathetic nerve performs its function, as anywhere else, by influencing the activity of the blood-vessels, and governing the chemical organic process, and probably

even the involuntary movements of the iris, chiefly those which cause the dilatation of the pupil.

The iris receives its primitive fibres not only from the oculo-motorius and trigeminus, but from the superior cervical ganglion; the fibres coming from the ganglion have their central organ, according to Budge and Wagner, in that part of the spinal marrow which corresponds to the first three thoracic vertebræ; because irritations of the sympathetic nerve above the first cervical ganglion along its whole way as far as the ciliary ganglion, produce dilatation of the pupil, whilst irritations of the thoracic and abdominal part of the sympathetic nerve produce no dilatation of the pupil. If, however, dilatation of the pupil does take place in consequence of such an irritation, it is effected by reflex action from the spinal marrow.

The nervous fibres of the iris coming from the trigeminus and sympatheticus seem to stand in an antagonistic relation to the nervous fibres of the oculo-motorius. Paralysis or dissection of the trigeminus and sympatheticus caused an increased influence of the oculo-motorius, and therefore contraction of the pupil; whereas irritations of the sympatheticus diminish the influence of the oculo-motorius, and cause therefore dilatations of the pupil. Irritations of single branches of the trigeminus, chiefly of such which are in nearer relation to the ophthalmic ganglion, communicate their irritation to the sympathetic nerves of the iris, and *thus* cause dilatations of the pupil; whereas intense irritations of the whole ophthalmic ramus, or even of some other branches too, reflect in a higher degree on the oculo-motorius, and *thus* produce *contraction* of the pupil.

The dilatation, therefore, and contraction of the pupil, is dependent upon the prevalence of the activity of one or the other antagonistic forces and the influence of the sympathetic nerve. You will, therefore, meet, Gentlemen, amaurosis with dilated pupils, and amaurosis with contracted pupil, or of a middle size, or perfectly round, or angular, and drawn more towards one direction, according to the influence the corresponding nerve-fibres, producing and directing the movements, may exert, on the whole or part of the iris. But not the nerves alone and their state influence the movements; the vessels of the iris and their state modify the movements, or contribute to its degrees. The congested state of the vessels may influence it greatly, and even suspend it. The pupil in this patient is of a middle size, not round, but more oval in the right eye, and somewhat angular in the left eye. If separately examined (by closing one eye), neither of the irides reacts to the influence of light, as you see when I produce with my hand a shade before the open eye, and remove it suddenly. In amblyopic patients, who have some sight in one eye, it is of consequence to close it when examining the affected one, as the movements of the sound one may be communicated to the affected one. Some ophthalmic surgeons content

themselves with closing the eye to be examined, by the lid, without apposition of the hand; which is a mistake, as light passes through the eyelids, and does not produce such a contrast with the shadow as when covered with the hand. The slightest reaction will show itself in the eye *thus* examined. The investigation with the eye speculum permits the examination of the living retina, and it was stated by those* who made examinations with the eye speculum that most of the cases hitherto observed have shown morbid changes of the retina, whilst in those where no change was traceable, a central cause is assumed to exist. The results of retinitis and chorditis will be visible in form of different deposits, traceable by the eye speculum, spots of different form, extent, and color.

Congestion of the vessels will be to a *certain degree* apparent. One commits an error in assuming, as it is lately often done, a congestive state of the vessels, if no other cause traceable by the speculum is found; although comparatively you may see in the same individual in both eyes a different appearance, the congested state of which will be apparent, still the enlargement of the vessels being as relative as the difference of the red color in the different eyes, it will not always be possible to assume the existence of such a state unless the development of a comparatively high degree of the general plethoric habit, or other causes locally enlarging the vessels, justify such a diagnosis. Although there exists some independence of the circulation in the capillary system of the arteria centralis retinæ, favoring, under certain conditions, a stagnation of blood, it nevertheless is in intimate connection with the general system carrying blood. The development of the arteria centralis and its capillary system is different in different individuals, respecting the calibre of its vessels; and although the chief branches, running up and downwards, are more or less alike, still their dimensions alter and vary in number as well as size. If you look into my right eye, you will discern the much-developed arteria centralis retinæ and its branches, by the eye speculum, even without the pupil being dilated by bellad., and without the use of a magnifying glass; and still my sight is perfectly good. In other individuals the same arrangement and enlargement of the vessels may be a sufficient cause for congestive amaurosis. This shows you, therefore, that it is not always advisable to content ones'self with the sight of enlarged vessels in order to establish a diagnosis of amaurosis. True it is, that a stagnation of blood will cause an enlargement of vessels, and the abundance of blood may be looked upon often as a cause of amblyopia, or even as producing amaurosis.

If you examine the eyes of this other patient (the woman) you will find

* Helmholtz, Donders, Ruete, Hoyack, Tilanus, E. Jaeger, Van Trigt, and Schauenburg.

in the right eye as well as in the left eye, but considerably more in the latter, large, distended vessels running in all directions, the horizontal ones scarcely much less in diameter than, under ordinary circumstances, the vertical ones appear; and if you look at it patiently you can observe, even without a magnifying glass, a change taking place sometimes in the dimension of the lower branch; the imperfect sight she complains of, which becomes at times so bad that she can scarcely see and every thing turns black before her eyes; the flashes before her eyes; the sluggish movements of the pupil, will admit, taking into consideration the transparency of the dioptric media, the diagnosis of a *congestive amblyopia*; the more so, as the stout, plethoric appearance of this red (I mean rosy) cheeked woman, who complains of cerebral congestion, favored by the excessive heat, chiefly when suffering, as she often does, from constipation, speak for its probable existence.

The subjective symptoms are pains across the eye brows and forehead, coming on sometimes in certain intervals, mostly irregular, sometimes shooting pain in the interior and different—often dependent in degree and intensity—from the cause producing amaurosis.

In the beginning of the disease the patients see objects imperfectly, misty, dim as this patient did see, the patients complain of the light being too weak or (in those in which the sensibility of the retina is increased by too strong a light); the haziness and cloudiness increase; the objects appear gradually, sometimes suddenly, dimmer; the letters of a book, when read, seem to run into each other, the eye feels soon tired. Vision is impaired in the most different ways; the perception is an anomalous one, or the representation by the mind may be a defective one; the objects appear variously distorted, and are perceived differently from what they really are in regard to form, color, proportion, and relation to each other. Various kinds of spots are perceived as moving about, called motes, *mouches volantes*, like those the patient complains of, or confined to one spot (*scotome*); the sight diminishes until vision is entirely abolished, and the patient perceives not even the strongest light falling into the eye.

Mouches Volantes.—If the rays of light fall into the pupil in a convergent direction and form a cone of light, corpuscles contained in the eye can be observed in ones own eye, but only such as are smaller than the pupil and are situated close to the retina; there are as many cones of light and as many points depicted on the retina as luminous points of an object send rays of light into the eye. An opacity in the cornea or crystalline lens in the form of a dark spot, which is smaller than the pupil, might prevent the entrance of some rays of light of one or several

different cones, but could not make entirely invisible a point of the object, i. e. throw a shadow on a part of the retina, as the other rays falling undisturbed into the eye are sufficient to depict on the retina the perfect but somewhat darker-appearing image. But if small or dark corpuscles, which refract the rays of light differently from the normal, transparent, dioptric media, are situated close to the retina, the former may produce an irregular refraction, and consequently cause the appearance of colors or throw shadows on the retina and thus make invisible some spots of the object. The closer such an irregularly refracting and light-absorbing corpuscle is situated to the retina, the smaller will be its shadow thrown on the retina, whereas it will be greater, paler, the further from the retina the corpuscle exists. The materiality of these scotomes can be proved by the following circumstances: similar *mouches volantes* move in a direction independent of that of the eye; by a considerably strong movement of the eye the same may be directed higher (a little to the side) but they return and seem to sink after having mounted. If the axis of vision is directed in a certain point in the field of vision, after a forcible movement of the eyes, one perceives that the movements communicated to them by the direction of the eye is inconsiderable as they become soon quiet.

2. They change their relative position in regard of the singular parts of the figure, as well as in regard of their situation in the field of vision.

3. The layers more distant from the retina are more clearly larger, and have a more faded margin, than those situated closely.

4. The beads form often distinct loops, and this string of beads which crosses the other, situated nearer to the retina, forms a concave arch turned towards the retina, which appears paler and more cloudy than the rest of the string, being a little more distant from the retina, and throws therefore a less marked shadow on it.

5. Its original form is always the circular, and its shadow depends upon the intensity of the light.

6. They refract the light like a drop of water, which appears, under the microscope, with a dark margin whilst its centre is illuminated. This dark margin throws a shadow on the retina, which has, in some scotomes, a dark centre. The less the intensity of the light, the darker the shadow appears. The motes, or *mouches volantes*, present the most different varieties in shape, size, number, and color. Sometimes they are streaks, or lines, straight or angular, variously colored. Often they resemble forms reminding of insects, as a spider, or worm, etc. Their appearance is not always a symptom of an affection of the eye; they do exist in many without injuring the sight, although they are annoying. I am myself annoyed by such *mouches volantes* appearing in my left eye; after long exertion of accommodating to a near distance, or any other cause producing a greater

congestion of blood to the eye, or generally to the brain, I see a globular form mounting and descending, like pearls, whereas my sight is not troubled at all.

The appearance of motes may be produced artificially, by holding a card, perforated with a fine needle, towards the clear sky, or against a surface reflecting the light strongly, and looking through the hole; a very fine linen, held in the same way, will produce them. In some pathological conditions of the eye, they appear in the same way; for instance, when the cornea is anomalously vascular; the capillaries act in the same manner as the fine filaments of linen. They appear in congestion of the retina frequently, or by increased sensibility of the retina.

Ruete considers (from the existence of motes more or less constant even in healthy eyes, and probably dispersed through the whole of the eye, but perceived only under certain circumstances, and merely those situated in the vicinity of the optical axis, close to the retina) these corpuscles a kind of cells, as a morphological product of a substance forming and nourishing itself, and thus corresponding with the change of elements and the general nutrition of the eye. The frequency with which they appear, and the attention paid to the appearance, increase the annoyance and make them yet more troublesome.

The perception of the images depends upon the sensibility of the retina. If the latter is dynamically or materially altered, or if its connection with the optic nerve is interrupted, blindness, defective perception, or disturbance of the visual power does take place, in consequence of inactivity or qualitatively altered action of the nervous apparatus of the eye. If the retina is in a state of torpor, small objects will be seen with greater difficulty, although the other constituents of the eye be in a healthy condition. If parts of the retina are paralyzed, the same do not communicate the received impression to the sensoria, and therefore appear other points of the object corresponding to the affected part, as *dark* spots on the object, which become the more apparent the healthier the other parts of the retina, the nearer they are to the optic axis and the intenser the objective light is. On the contrary, they are not apparent in an obscure light, or by closed eyes. The movements of those dark spots are not, like the mouches volantes, independent from the movements of the eye, but coincide with the directions the latter takes. If the paralysis does extend on the half of the retina *hemioopia*, half sight, takes place. If paralysis takes place only in one eye, which frequently occurs after wounds and local diseases in the eye, the spots appear *dark only* when the sound eye is closed, and cloudy if it is opened.

The perception of dark objects on light ground is to be compared with the perception of the dark spots caused by partial paralysis of the retina, for

instance the reading of black letters on white paper. The objects are dark if they absorb all the light falling on them, consequently the retina cannot be stimulated by them; the corresponding parts of the retina remain therefore in the state of relative tranquillity; this tranquillity is projected and received by the mind in the form of the outline of black objects. The perception, therefore, of black objects depends exclusively upon a subjective process.

Congestive Amblyopia and Amaurosis.

Congestive amblyopia and amaurosis may be produced by all local or general causes effecting a greater congestion of blood to the eye. Local hyperæmia may be induced by every cause producing an enlargement of the smallest capillary vessels, which may exist in the walls as well as in the contents of the vessels, and in its nearest vicinity, or in more remote parts (in front of, or posterior to the congested part), and may be found in the increased pressure of the blood, or in the diminished resistance of the walls. The pressure of blood may be increased, in consequence of the accelerated conveyance of the blood from the arterial side, or may be caused by an impediment in its flow towards the venous side. Increased or diminished activity of the heart may, therefore, produce congestion to different organs, and consequently, also, to the eye. The altered state of the blood, regarding its quality and quantity, will naturally react on the nervous system accordingly. This form of amblyopia and amaurosis occurs frequently in plethoric as well as in anæmic individuals, and may be associated with general cerebral congestion, or be produced in consequence of a peculiar position of the head, as in miners, or in consequence of an exertion of the eye on minute objects, as required in the occupation of miniature painters, goldsmiths, watchmakers, jewellers, and seamstresses, who are compelled to stoop more or less. The use of spectacles and glasses, concentrating the light too strong, may produce this affection; suppression of the hæmorrhoidal and menstrual flow, diseases of the valves of the heart, tumors in the stomach, or whatever cause impeding the circulation, may induce such a state of sight.

Virchow asserts that every local pathological process results from a modified nutrition, and is associated with changes of the exudation and resorption (therefore chiefly inflammation): it exists on impairment of the conditions of diffusion between the blood and textures, according to which one or the other is increased or diminished, nutrition being mainly dependent on two currents of fluids, the one proceeding from the capillaries into the textures, the other from the textures into the capillaries, in certain conditions of diffusion. Used-up elements of texture become resorbed, whereas new

constituents of the blood exude. An altered capillary exudation must take place in every congestion.

Erethic and Torpid Amaurosis.

Erethic and torpid amaurosis may be induced both from causes depressing the powers of life, and thus exhausting the constitution, as direct loss of blood, or in females, copious metrorrhagia, insufficiency of nourishment and its consequences, or sudden abstinence from accustomed stimulants, or nervous exhaustion dependent on sexual intemperance, or diseases of the spinal chord; or it may be induced by causes producing locally, in the eye, erethismus or torpidity of the retina, as over-exertion of the eye, be it through the abuse of spectacles, continual and protracted microscopic observations, or examination by the eye speculum; or it may be further caused by every excessive illumination, be it from the reflected light on the retina from the eye speculum, or observations of solar eclipses, or the glare of a tropic sun, to which sailors and travellers are sometimes exposed; or it may be caused by the reflection of light from the long-continued snow. It frequently occurs in engravers, polishers, jewellers, who have to look continually on the reflected intense light from the smooth and glaring surface, or in jewellers and watchmakers, who have to look continually on well-illuminated, minute objects, with the use of magnifying glasses; generally it is met with in seamstresses, who exert their eyes in sewing dark materials by too faint a light, or reflecting, white material too strongly illuminated: all causes, therefore, augmenting or diminishing the sensibility of the retina, and thus exhausting it, may produce erethic or torpid amaurosis. It is self-evident, that the vascular system of the eye is adequately influenced by the morbid functional alterations of the nervous system, be it in consequence of general or local causes. In the absence of a local cause, we are justified in assuming a central cause producing amaurosis. A morbid mixture of blood can not exist without an injurious effect in the circulation, respiration, and innervation. In anæmic individuals you will find pallor of the parts rich of blood, as of the lips, gums, palpebral conjunctiva, tongue, and cheeks. Menstruation ceases, or sometimes morbid hæmorrhages take place, in consequence of the greater liability of the badly-nourished walls to be broken through, chiefly epistaxis and hæmorrhages of the uterus, nun's murmur, blood in the heart and arteries, diminished heat in feet and hands, shivering, bad nutrition of muscles, flaccid flesh, sensation of fatigue and short breath after small exertion, slow digestion, obstruction.

Nervous symptoms occur in consequence of bad nutrition of the nervous system (headache, vertigo, darkening before the eyes, syncope, ringing in

the ears, heart-beating, morbid appetite, spasms). Causes of such a state are mostly debility, mental depression, want of food, protracted lactation, debauchery, excessive discharges, as from abscesses and ulcers, subterranean and damp dwellings, insufficient light, sedentary life, and deficient air and exercise.

You observe, gentlemen, how intimately connected ophthalmic medicine and surgery is with the studies of anatomy, physiology, and pathology, on which the treatment is based; the eye being in intimate connection with the other organs, and its functions in some measure dependent upon them, consideration must be had of such circumstances, as the *ophthalmic surgeon* sinks to a mere "oculist," who empirically treats but the eye, as a mere optical instrument, dependent upon itself, regardless of its intimate connection with the other organs of the body, and their influence on it, irrespective of all the pathological processes, which are similar to those in other parts of the body.

CLINICAL LECTURES

ON SOME OF THE

PRINCIPAL DISEASES OF THE EYE.

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CATARACT.—*Continued.*

GENTLEMEN! The Eye Speculum, or Ophthalmoscope, is an illuminating instrument which serves for examining the illuminated interior parts of the eye, and thus distinctly shows organic changes of the aqueous humor, of the lens and its capsule, of the vitreous humor, the retina, and choroidea, when unobservable by the naked eye. The necessity of such an instrument is obvious, if we reflect that the retina is almost entirely concealed from view to the naked eye. Various contrivances and modifications of them have been introduced for this purpose.

Helmholtz devised this speculum, which consists, as you observe, of *reflectors*, to illuminate the retina, and a *concave lens*, to bring its structure within our focus of vision. The reflectors are four parallel and well-polished slips of glass, which are fixed close by an open frame, which is fastened down by screws to the sides of a short square tube. One end of the tube is cut obliquely to form an angle of 56° with the base or other end. The exterior is bronzed, the interior lined with black velvet. A diaphragm and a biconcave lens, No. 12, are placed at the base, and secured by a hollow eye-piece, which can be screwed off and on so as to allow the lenses to be changed.

Method of using it.—The patient should be seated in a dark room; a good oil or gas lamp should be placed on his side, on a level with his eyes. The reflectors must be turned towards the eye to be examined (the pupil should be dilated by atropine), and must be adjusted so as to throw the light in the direction of the axis of the instrument on the eye to be observed. The observer, having closed one eye, looks through the biconcave lens, and is thus enabled to see the interior of the eye illuminated. The rays of light, on leaving the convex surface of the cornea, are convergent; but the observer's eye can only bring to a focus slightly convergent or parallel rays; the necessity, therefore, for interposing a concave lens in order to disperse the rays before entering the observer's eye, is evident. By some

management of this instrument, if the eye to be examined is turned inwards, you may see in the healthy eye the blood-vessels of the retina and the entrance of the optic nerve, which is recognized by its brilliant white color; it is not always easy to detect it, and some practice is required in the use of this instrument in order to bring them into view. Round about the optic nerve the color of the retina is clearest, and becomes darker towards each side. If the eye of the patient is directed inwards, the papilla nervi optici may be detected.

Coccius invented a speculum more suited to show the interior structure and changes of the eye. It consists, as you see, of a perforated mirror and a lens. The rays of light from a gas, or better, an oil lamp, are concentrated by the lens and thrown on the mirror. This is held before the eye to be examined, and the rays are thrown through the pupil on to the retina. The unabsorbed rays return in the same direction, and are received by the eye of an observer, which is behind the mirror, on the spot where it is perforated. The rays of light are reflected at an angle upon the mirror, and are conveyed to a focus on the retina by the media of the eye; the unabsorbed rays return on leaving the eye to the mirror whence they came, and are also received by the eye of the observer.

Method of using it.—The pupil of the eye having been dilated by atropine, the patient and surgeon are seated, as in the use of the other speculum. The mirror is held opposite the eye to be examined, the lens must be adjusted so that a bright concentrated light should be seen to fall on the pupil. The surgeon now applies his eye to the back of the mirror. This instrument must be held at different distances from the eye, until the retina is exposed to view, and its parts clearly seen by different movements of the eye. You see now the whole pupil illuminated by the concentrated light; if you interpose between the eye of the patient and the mirror, convex lens of one and three-quarters focus, at a distance of one inch, you will readily distinguish the magnified vessels, and see clearly the white, shining optic nerve. The lens must be held at a shorter distance from the eye than its focus is, in order to make allowance for the space from the cornea to the retina. An interposed biconvex lens will show the vessels clearly defined, but diminished. Its adjustment requires practice and patience. More manageable and simpler in its construction is the

Ophthalmoscope of Klaunig.

It consists of a perforated, biconvex lens of fourteen inches focus, is thirty-five millimetres in diameter, and is provided with a blackened hole of four and a half millimeters—one side of the lens is covered with foil and framed in a dark frame, to which a handle is attached. The best mirror for reflecting concentrated light is a concave one; but this causes an intense

and disturbing reflection from the cornea, and dazzles the eye of the patient; but in connection with a biconvex lens, the rays of light are broken twice by entering and leaving the lens; consequently, the divergent rays of light will be removed and the intensity of the flame thus diminished. In its effect, this mirror is equal to a concave mirror of three and a half inches focus.

Mode of using it.—In a dark room, or a place well shaded, the patient and surgeon may be seated, the light, oil or gas lamp, is to be placed on the opposite side of the eye to be examined; the speculum should be held about three and a quarter inches from the eye, in such a manner as to reflect the rays of the light and to throw them through the pupil on to the retina. The apex of the cone of light thus formed should fall behind the pupil, which, if it be a small one, must be dilated by atropine. I prefer the gas light to be placed above and behind the patient. As the mirror has to be adjusted and turned in different ways, the observer's eye is exposed to its influence, and the patient's eye is not sufficiently shaded when it is placed on the side. The observer applies his eye to the back of the mirror, the hole.

The application of it is more convenient, as you see, when the light is placed above and a little behind the head of the patient, as the mirror may be held directly opposite the eye without being turned sideways in order to illuminate it. By its use the slightest opacities may be detected and traced, be they in the lens or capsule or aqueous humor. The vessels, of course, will be invisible if there exists an opacity of the lens to a greater extent; however, even if the opacity may not be as yet traceable, and some change still exists in the transparent media, the greatest difficulty will be found in bringing the vessels into view. I examined several cataract patients with this speculum but a few days ago, and I readily distinguished the opacities situated in the lens and those of the capsule. In one instance, a woman, about forty years of age, I could trace the opacity from the centre towards the periphery. The opacity formed a tripartite division of the lens, which could be seen even without the use of a magnifying glass. In another individual the opacity could be detected on the periphery of the capsule, in form of longitudinal streaks, situated close to each other and presenting the appearance of eye-lashes turned downwards and outwards. In the right eye of the same old man, there were opacities in the form of round spots on the capsule; and at the same time a synechia posterior, confined to one spot, where the uvea of the iris was connected with a part of the lower margin of the lens, was distinctly visible by application of the magnifying glass before the eye speculum. The latter individual was also subjected to the examination by the use of Coccii's speculum. I had some difficulty in tracing the vessels, as they were partly masked by the opacity of the lens; the other reason may be that my Klau-nig's speculum was deprived of the foil in some parts near the hole, and

thus the intensity of the reflection was diminished. If concave glasses are applied before the eye to be examined, the vessels in the healthy eye may be readily distinguished, although diminished, still more defined. The distance at which Klaufnig's mirror has to be applied, generally depends upon the extent of the hole in the mirror and the extent of the pupil. In order to illuminate the eye it is necessary to throw some concentrated rays of light, emanating from the centre of the mirror, around the hole; the shadow, therefore, of the hole, together with some concentrated rays of light, must be thrown into the interior of the eye; consequently, the more dilated the pupil is, and the smaller the hole in the mirror, the nearer may the mirror be brought to the eye; whereas, the larger the opening in the mirror, and the smaller the pupil, the more will it be necessary to remove the mirror from the eye, and the more will the mirror exert a dazzling influence upon the patient. If you bring the mirror too close you will be misled, especially if you look at the eye by a wax-candle, to mistake one of the images of the flame, if bright and almost appearing white, for the entrance of the optic nerve if brought in a certain direction; on the other hand, you must be careful not to consider the depicted mirror in the eye to be the appearance of the nerve.

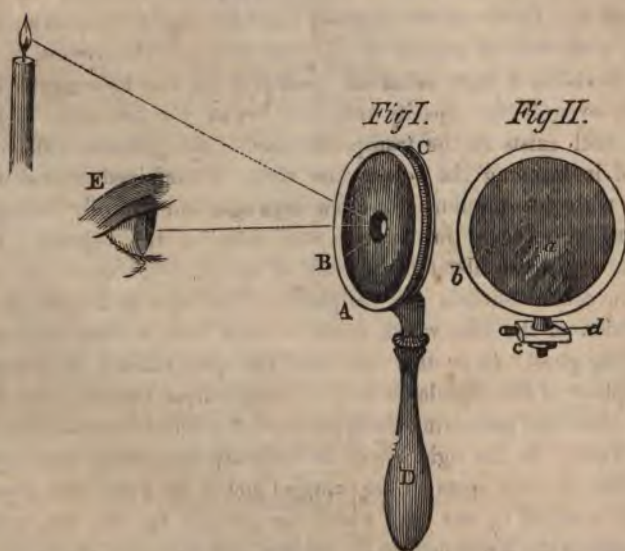


Fig. I.—A, a biconvex lens; B, the hole; C, the frame; D, the handle; E, the patient's eye.

Fig. II.—a, the plane mirror; b, the frame; c, the horizontal piece to be fixed to the first mirror; d, indicating the line to turn the mirror in an angle of forty-five degrees.

Klaunig has devised an improvement on his speculum, which consists in a second mirror, to be brought as near as possible to the first, in such a direction that a line drawn from the retina through the hole of the mirror should meet the centre of the second mirror, which is placed vertically to this line, but in its horizontal direction, at an angle of forty-five degrees. Instead of the observer, the second plane mirror receives the image, which can be seen readily without any exertion. A magnifying or diminishing glass will reproduce the image accordingly, if applied instead of the second plane mirror.

Klaunig used a stronger convex glass, of eight inches focus, for this purpose, as he preferred observing closely under the influence of a stronger light. He asserts that by this means draughtsmen and those less accustomed to similar examinations, are enabled to see clearly the images. In examining myopic eyes, the refraction of their media has to be corrected by the application of a presbyopic glass, in order that the image on the retina should appear clearly defined.

The examination of the eye requires a good deal of patience and endurance, but if practised for some time, the surgeon acquires a certain ability in it, and considers it less difficult. However, great caution is required in the use of all eye specula. Nothing is more injurious than protracted examinations of the eye, for both ophthalmic surgeon and patient. The latter may, in consequence of the examination, if often repeated and protracted, acquire an additional injury from the over-exertion from the reflected strong light on the retina. Nothing is more calculated to weaken the sight and produce amblyopic and amaurotic symptoms than similar experiments and examinations, if injudiciously made.

Varieties of Cataract.

Black cataract is a rare occurrence; it is the hardest of the lenticular cataracts; when dropped into a glass the same resounds. It is apt to be confounded with amaurosis, but may be readily distinguished from the latter by the activity of the pupil, which is absent in amaurosis, or modified, being very sluggish in its movements, if there exist any at all. Further, the examination by the speculum will show the opacity of the lens in black cataract, and transparency of the same in amaurosis.

Frequently, the lens becomes lessened in volume by a natural process of absorption; the more it shrinks the more the capsule contracts upon it and shrivels up. The capsule thus shrunk, thickened, and corrugated, may contain a diminished lens (*cataracta arida siliquata*). The lens may be absorbed in consequence of an injury inflicted upon the eye (traumatic cataract), or a needle operation performed on it: a membranous or capsular cataract may remain, which, according to its density, may present a scarcely

discernible film, or appear chalky or milky; ordinarily it is unequal in its extent. The opaque membrane, consisting of the two parts of the capsule closely situated, may be connected with the ciliary body, or more or less separated from it. If entirely separated from the ciliary body, it may oscillate backwards and forwards during the movements of the eye (shaking cataract), or float behind the iris (floating cataract), or even pass into the anterior chamber. A calcareous or bony transformation of the capsule and the lens may take place. Desmarres, of Paris, and White Cooper, of London, and others, observed similar ones.

Secondary cataracts are formed in consequence of needle operations, and may be lenticular, capsular, or capsulo-lenticular.

Spurious cataracts are formed as products of previous or existing inflammation of the iris, choroidea, ciliary body, retina, or capsule, and may be

(a) Fibrinous.

(c) Sanguineous.

(b) Purulent.

(d) Pigmentous (uvean).

(a) The *fibrinous cataract* is the result of an inflammation of the iris and the capsule, and is deposited in the latter in the pupil, sometimes pushing forwards into the anterior chamber more or less connected with the iris. It presents a white spot, mixed with yellowish points or tubercles.

(b) The *purulent cataract* is formed by a collection of organized pus in the pupil, where a thick, unequal, wrinkled mass is visible, connected entirely with the pupil, which is immovable. The iris is discolored, and often shows marks of a previous chronic inflammation. At the same time, an organized hypopion is met with in the anterior chamber. Vision is entirely gone, and little hope remains for its restoration.

(c) *Sanguineous cataract* developes itself in consequence of wounds inflicted upon the eye, or in consequence of spontaneous ruptures of the vessels (apoplexy) in the eye. The anterior chamber, or only the pupil, is filled up with a dark brown, almost black mass, which shows *gray* prominences in some of its parts.

(d) *Pigmentous (uvéenne) cataract** presents a dark brown or black opacity, which is formed by the uvean pigment deposited in the pupil on the fibro-albuminous product, which covers the capsule, partially or in its whole extent. The pigmentous cataract adheres sometimes to the iris in one or more points. Sometimes it is formed only in the centre of the cap-

* Desmarres.

sule, and is not connected with the iris, which then retains its natural movements. This form of spurious cataract is produced by a traumatic inflammation of the eye, chiefly if iritis is associated with it; when the inflammation may extend from the iris to the capsule, or it may be caused by an inflammation spreading from the capsule to the iris. The following circumstances contribute much to the formation of a spurious uvean cataract and its being situated in the pupil. In internal inflammation of the eye, chiefly iritis, the vessels of the iris are gorged with blood, the iris develops itself in thickness from forwards backwards, and in its superficial extent; the parenchyma of the iris thus enlarged, causes a diminution of the pupil (which lasts as long as the anomalous state of the iris exists), and approaches the capsule, which underwent the same changes as the iris; and thus tends to meet, as it were, the iris. The greater the vascularity and inflammation of both, the easier is the adhesion effected. Besides, the form of the posterior chamber being such as to permit a nearer approaching of the centre of the iris than of its periphery to the capsule, it is evident that it facilitates the formation of an adhesion. The pigment or uvea is developed on a larger surface in consequence of the extension of the parenchyma of the iris. If the secreted organizable lymph is deposited in abundance, and the internal inflammation lasts a long time, the adhesion between the iris and capsule will be a permanent one, thus producing a synechia posterior. But if, on the contrary, the fibro-albuminous deposit is formed in a small quantity and becomes slowly organized, and at the same time the turgescence of the vessels disappears with the inflammation of the iris, the latter will tend to resume its natural movements, by retracting towards the ciliary margin. It will result in this struggle with this badly-organized new formation, that the false membrane will give way by degrees, and will thus give rise to the formation of longer or shorter fibro-albuminous threads, covered on their anterior surface with pigment, connected in front with the iris and backwards with the capsule; or, in other instances, the false membrane being firmly connected with the capsule, will retain some parts of the uvea, the pigment which the iris lost in its tendency to resume its normal position and left on the capsule; and by withdrawing thus from the connection with the capsule, a pigmentous cataract will be formed, without connection with the iris.

Vision is more or less altered, according to the extent of the uvean deposit on the capsule and the obliteration of the pupil; the patient retains always the perceptibility of light and darkness.

Pigmentous cataract may be confounded with black cataract and amaurosis, and may be distinguished by the following symptoms:—

Pigmentous(uvean)cataract.

The *pupil* is immovable in the complete pig. cat.; is adherent, and presents a more or less irregular form. By application of atropine, it may *not* dilate at all, or do so irregularly.

The *color* of the pupil is seldom perfectly black; the color of the uvean pigment is unequally dark-brown, and mixed with blackish threads formed by the false membrane covered by the pigment.

Internal inflammation of the eye always precedes or coexists.

No shadow of the iris, if adhesion exists with the capsule to a greater extent.

By examination with eye speculum, opacities are observable in front of the lens.

Black cataract.

The *pupil* is movable, as in the normal state.

The *color* of the pupil is seldom perfectly black; the lenticular opacity is black—duller in the centre than in the periphery.

No previous inflammation of the internal structure of the eye.

A shadow of the iris is visible on the capsule.

Opacity in the lens.

Amaurosis.

The *pupil* is round or elliptic, and not attached to the capsule by black threads, thus producing a more or less anomalous form of the pupil.

The black color of the pupil is formed, as in the normal state, by the back ground of the globe behind, and not in the pupil.

Inflammation of the eye mostly absent; often, it may have existed, or be present

No opacity in the lens or capsule. The red color of the choroidea mostly equally diffused, deposits on the chor. or retina sometimes visible.

Adhesions of the pupil are produced in consequence of internal inflammations of the eye. Change of color in the iris is usually noticeable. Change of the structure of the retina, and loss of sight, may be caused by the same inflammation. The presence of such an adhesion (*synechia*), demands always some consideration in the choice of the operation.

Maturity.—If a cataract has been forming for a long time, without an altered state of the other transparent media and textures of the eye, it is not absolutely necessary to await the complete change or maturity of the cataract. If, however, the cataract is the result of a still-existing inflammation or congestion in the eye, it is not advisable to operate upon it, but it is preferable to wait till the change has been completed.

Complications may exist, as purely local ones, as alterations of the structure of the iris, choroidea, retina, vitreous humor; or general ones—the constitution being in a depressed state, or an unhealthy condition of some nature may exist in one of the principal organs. Similar complications have to be regarded and consulted in the choice of an operation, as well as of the time.

Treatment.—As long as the eye may be rendered serviceable, be it by application of atropine or by the use of an eye-glass, the ophthalmic sur-

geon is not justified in performing an operation for cataract on it. I recollect two cases under my treatment while attached to the German Hospital in London, in both of whom a partial opacity of the capsule demanded the instillation of atropine, which produced sight available for ordinary purposes. The one was a German seamstress, about twenty-five years of age, with circumscribed central opacities in both capsules. The other was a refugee, about forty years of age, with a central opacity in the left lens. Vision of the right eye was entirely gone—its textures disorganized. Both used the atropine for about ten and fifteen months, and continued in its use about twelve months ago, when I last saw them.

If we except the traumatic cataract, which, together with some of the spurious cataracts, is often amenable to medical treatment, we generally must have recourse to a surgical treatment in order to remove a cataract.

Although many ancient and modern ophthalmic surgeons pretend to have removed spontaneous idiopathic cataracts of the lens, by applications of ammonia, veratria, etc. to the temples or top of the head, I very much doubt this being a fact. The mistake may have been in the formation of the diagnosis, if not in the assertion of the truth.

The formation of the true idiopathic cataract can neither be arrested in its development nor removed by a medical treatment. Rupture of the capsule, be it produced by a fall or shock, may expose the lens to the action of the aqueous humor, and thus the lens may become absorbed without a surgical treatment.

In young individuals, the operation for cataract may be performed in one eye while the other is sound. In older individuals, it is not advisable to expose the sound, at least yet serviceable eye, to a sympathetic risk, by operating on the affected eye—the use of the available one being sometimes sufficient for the remainder of life. If, however, the second becomes gradually worse, it is useless to await the complete formation of the cataract. Cataract in one eye often gives rise to the formation of strabismus, which, if of long standing, aggravates the beneficial result of the operation. This may be considered as an additional reason for operating in young individuals when one eye is affected with cataract.

With the exception of very hot weather, almost every season of the year may be chosen for the operation. I saw operations performed with equal success in different countries (Hungary, Germany, France, and England) in various seasons; but it is not advisable to procrastinate an operation for such a month as is generally known to be a very changeable one in weather, which is more or less peculiar to every country.

In congenital cataract it is advisable to operate in six weeks or two months after birth, in order to allow time if necessary for repetition before teething begins, and then to prevent a continual oscillation of the globes,

which often follows if light is shut out long from the retina. I saw Bowman operating in several instances. His remarks were to the effect that, however free you may move the needle for breaking up the cataract the subsequent inflammation is very small.

Operation on both eyes on the same day.

Jaeger, Rosas, Fabini, Roux, Guthrie, Sichel, and Desmarres, I saw operating for cataract on both eyes, on one and the same day; whereas Desmours, Dupuytren, Travers, and others, await the recovery of the operated eye before they operate on the other. The reasons for operating on both eyes on the same day are,

I. That the surgeon has to expose the patient twice to the inconveniences and accidents during the treatment, if he operates at different times, as to bleeding, vomiting (after incision), etc.;

II. That in operating on both eyes, the patient has more chance of recovering the sight, at least in one eye;

III. If the one eye is operated upon much sooner than the other, the former will, after recovery, gain a much greater relative power of accommodating the sight,* and the last one operated on is more apt to be neglected, which may produce unequal vision;

IV. In case the result of the operation is not attended with success, the patient will less willingly and perhaps not at all submit to a second trial; whereas he will be glad to submit to a second operation if he regains the sight in the operated one.

For these reasons, I decide also on operating, on this boy, on one and the same day.

However, there are instances where it is imperative not to operate on both eyes on the same day; if, for instance, two modes of operating have to be chosen in both eyes, where the peculiar symptoms consequent upon one mode would interfere with the treatment to be selected for the other, and thus endanger the result of the operation. Those who advocate the performance of the operation at different times, assert that the risk of inflammation is greater, and often settles to a greater extent in one of the eyes, and that accidents are generally of a more serious nature.

Preparation of the Patient.

A good state of health is required in patients to be operated upon for cataract. Although it is superfluous, sometimes even a disadvantage, to alter the diet the patient has been accustomed to, still it is necessary that

* Which may depend on the various combined actions of the ocular muscles, thus possibly altering the antero-posterior, horizontal, etc., diameters.

the patient should abstain a few days, previous to the operation, from fermented liquors, and sometimes from animal food too. The bowels should be evacuated the day previous, or on the same morning; but the natural functions of the stomach and bowels must not be disturbed by unnecessary purging. In plethoric individuals, general bleeding may be necessary; whereas, a state of depression or debility may induce to a corresponding previous treatment. As a general rule, it may be considered best not to operate upon a patient with a cough; nor should the ophthalmic surgeon do so on a patient with a foul tongue, or where a specific inflammation, be it a gouty, strumous or syphilitic one, is present in the eye; or if the same was recently the seat of an inflammation from whatever cause. A long interval of time should be allowed to pass before an operation is attempted in an eye thus morbidly altered. Attention has to be paid to the secretions and excretions. The urine has to be examined, whether or not deposits of uric acid and urate of ammonia are in abundance, which may be considered as symptoms of dyspepsia or fever; the presence of phosphate of lime or ammonio magnesia phosphate will denote excessive prostration, or nervous depression; and, in short, a consideration must be had of all the functions of the animal economy upon which health depends.

Advanced age is no impediment for operating; the best results follow operations performed on individuals above 90 years of age.

Operations.

Extraction, Depression, and Solution or Division, are the three established general modes of operating for cataract.

Extraction consists in making an incision through the cornea, lacerating the capsule, and forcing the lens through the pupil and opening made in the cornea.

This mode of operating is applicable for *hard*, *half-hard* and *half-soft* cataracts.

To perform it, it is necessary that within reach of the surgeon should lay two or three sharp cataract knives (Wenzel's, Beer's, Jaeger's, or Guthrie's), one or two fine probe-pointed bistouries, a pair of Maunoir's scissors, curette hook, sponge, warm water, cambric rag and bandage. The room should be provided with means for darkening it.

The patient may be seated in a lower chair without a back, the surgeon opposite in a higher chair,* while an assistant standing behind the patient, fixes (with the index and middle finger of one† hand) the upper lid to the ciliary ridge, and holds the other under the patient's chin, thus gently press-

* Jaeger, Rosas, Arlt, Sichel, Desmarres.

† The left for the right eye, and right for the left eye.

ing the patient's head to his chest. The surgeon depresses with the index and middle finger of one hand* the lower lid, and fixes the globe by pressing it, and holds the instrument in the other.

The light must be allowed to fall obliquely upon the patient's eye.

Or the patient is seated in an arm chair,† and leans his head backwards, the operator stands in front or behind the patient; or the patient lays comfortably on a couch, and the surgeon is seated behind the patient, and rests his elbow on the head of the couch.‡

Suppose the patient to be seated in a chair without a back, and the operation for extraction has to be performed on the left eye§; the surgeon holding the knife in his right hand, between the thumb and the first three fingers, fixes his little finger on the malar bone, and proceeds to incise the cornea, after having touched the cornea with the flat surface of the knife, to steady the eye.

The incision may be made in three different points of the cornea; or it may be pierced about its middle, close to the junction with the sclerotica at its outer side, and a semicircular flap of the cornea may be formed parallel with its margin (superior section), or the flap may be formed on its lower half (inferior section), or on its lower and outer side (exterior and inferior section).

I prefer the superior section: if this be adopted, the cornea has to be pierced with Beer's, Wenzel's, or Jaeger's cataract knife, directly (and not obliquely) close to its junction with the sclerotica, about the middle of the cornea, at its temporal side, the knife, with its cutting edge turned upwards and the flat part parallel to the iris, has to be pushed rapidly, but steadily, across the anterior chamber; the cornea then is punctured again on the opposite (nasal) side as near as possible to its junction with the sclerotica; the knife is now carried upwards very slowly,|| parallel with the circle formed by the junction of the iris and sclerotica, and thus the semi-circular flap is completed. The aqueous humor escapes when the section is completed. The upper lid must now be dropped, and the eye allowed to rest for a few moments; when the lid should be raised again. The iris will be found to bulge forward together with the cataract against the concavity of the cornea.

* The left hand for the right eye, and right for the left eye.

† Guthrie.

‡ Bowman, Dixon, and others.

§ The pupil is to be dilated by atropine: although it contracts quickly when the anterior chamber is opened, still the iris is less in the way of the knife while it is pushed across the chamber.

|| If the knife is carried quickly, an irregular, mostly triangular flap is formed, often too small to allow the lens to escape.

The second part of the operation consists in introducing the curette, or kystotome, under the corneal flap; the concavity of the curette must be turned downwards, until the point is opposite the pupil, when the point is turned inwards and sunk through the capsule, which is divided by drawing the instrument across it in different directions: then the instrument must be withdrawn in the manner it was introduced.* Sometimes the capsule lacerates spontaneously, in consequence of the spasmodic action of the ocular muscles, or inadvertent pressure on the eye. In such instances the use of the curette is unnecessary.

The third part of the operation, removal of the lens, is effected by directing the patient to open the eye, when a gentle pressure is made by the blunt end of the curette upon the upper lid, and a counter-pressure on the lower with the finger's end, until the lens is dislodged, and its edge rises in the pupil. The lens thus distending the pupil, passes through it, raises up the corneal flap, and escapes from the eye. The upper lid is then brought over the eye and closed, in order to prevent the escape of the vitreous humor. After a few moments, the eye must be opened, to ascertain that the pupil is round and clear, and the corneal flap in its proper place.

After the operation thus finished, the room must be darkened, the eye kept closed and covered with a piece of linen, which should be secured by a fillet around the head. The patient may now retire, or await his usual hour for retiring, but should be seated comfortably in an arm chair.

The lower section is performed by turning the cutting edge of the knife downwards, thus forming a lower semi-circular flap; the outer flap by directing the knife downwards and outwards.

Guthrie devised a plan of operating without assistants, by fixing the lids and the globe with the fore and middle fingers of one hand, and using the knife with the other.

In the progress of the operation several casualties may occur, which may require the immediate attention of the ophthalmic surgeon. The iris may fall in the way of the knife in consequence of a premature escape of the aqueous humor, produced by undue pressure on the globe: a small bit of the iris,† especially of the pupillary margin, in contact with the edge of the knife should not be regarded, the operation ought to be completed. If a second pupil be made, the isthmus should at once be divided by the blunt-pointed scissors. If, however, a considerable portion of the iris should be in

* In the guarded curette is a sharp limb, more fitted for use than the ordinary one; the point is concealed by a little guard, so that the instrument is dull when closed; its introduction to the required spot is safe and easy; it may be opened by pressure on the trigger in the handle, and allowed to close when the pressure ceases.

† Walton.

the way of the knife, the instrument should be withdrawn; if the cornea be nearly divided, the section may be completed by introducing a secondary knife. The iris may bleed or not, this circumstance need not cause anxiety. Should the aqueous humor escape before the counter-puncture is made, the knife must be withdrawn, and the operation delayed. Imperfect counter-puncture may cause a smaller flap; the secondary knife has to be used to obviate the necessity of squeezing out the cataract, which attempt would be useless and fatal to the eye, as the vitreous humor is apt to rush out. If the vitreous humor escapes with the lens, in small quantity, no particularly bad result must be anticipated; but if the quantity be a large one, the globe collapses, and no hopes remain for the restoration of sight. The capsule may be imperfectly ruptured, and thus the free exit of the lens prevented: the introduction of the curette will be necessary to enlarge the aperture of the capsule. Hard fragments of the lens fallen in the anterior chamber, must be removed by the spoon of the curette. Many other accidents, too numerous to be mentioned now, may happen and require your immediate consideration.

After the operation, the eye must not be subjected to unnecessary examination, in order that the cornea may reunite, which takes place, generally, in from twenty-four to forty-eight hours. The surgeon must pay attention to the state of the lids during this time, and dry the lids with a sponge if any discharge exists, but should not open the eye. After three days, the surgeon may depress the lower lid and the patient raise gently his upper lid. The anterior chamber should appear filled with aqueous humor, which is a proof of reünion of the corneal flap. If neither the conjunctiva appear injected, nor the iris inflamed, the pupil be black, and the patient free from pain, the prognosis may be considered a favorable one.

The diet, which, till the fourth day, was a bland and unstimulating one, of a farinaceous kind, may now be a more supporting one; if the patient be much enfeebled or aged, beef-tea with sopped bread, may be allowed from the beginning; and solid nutriment, reduced to a pulp, may be allowed from the fifth or sixth day.

At that time, the patient may be allowed to open the eye in a subdued light, in order to test the result of the operation; he may change the bed for the arm chair, and, after a few days, walk about in the room, which should be kept ventilated, and a degree of light should be admitted that enables the patient to walk about. Sometimes the cornea unites rapidly, and the patient may recover the sight after the shortest time. The admission of light should be regulated carefully; for some weeks after the operation, he shade should be worn. Exercise should be allowed to the patient as soon as circumstances will admit it.

In a week or ten days after operation, the eye may be opened in a weak

light, and may be used more freely as it becomes stronger. The patient should be suited with eye-glasses in about a month or six weeks. By the loss of the lens, the refractive power of the eye is diminished; its place must be supplied by convex glasses. The patient should select glasses with which he can see best. Two pairs of spectacles will be necessary for him; one for ordinary vision, four inches focus, the other for reading, writing, and for other purposes requiring near sight, of two and a half inches focus, as the latter must be stronger. The patient must use them very cautiously; some weeks should elapse before he uses them freely. The result of the operation may sometimes be a less favorable one.

The most common cause of failure is acute inflammation, which usually occurs during the first twenty-four hours. Acute pain is felt in the eye-ball, then in and around the orbit; the lids swell, inflame, and are covered with purulent discharge on the border; it may terminate with thickening of the capsule of the lens, with adhesion of its divided parts, or adhesion to the iris.

Subacute inflammation is still more frequently the cause of an unsuccessful result of this operation for cataract. The subacute inflammation appears later than the acute one. It comes on a few days after the operation. The lids are of a darkish hue, and infiltrated with serum (chiefly the upper eyelid); the conjunctiva of the eye-ball is elevated by serous effusion, and presents a dull red color. Elderly persons being mostly subject to this kind of operation, are, for the same reason, liable to this asthenic form of inflammation. More generous diet and stimulant draughts may be allowed, to invigorate the constitution and thus remedy this affection.

Contra-indications to this form of operating, are, from obvious reasons, a sunken eye, a small anterior chamber, extensive adhesions of the pupil.

The white ring around the cornea (*arcus senilis*), which, as discovered by my friend, Mr. Canton, is a fatty change of the corneal structure, is no impediment to the extraction, if it is small. A larger arcus may heal more difficultly, as Beer asserts.

Depression or couching.—The patient having been prepared, as for the previous operation, his pupil dilated by atropine,* he is placed in a low chair, while the surgeon is sitting opposite, in a higher one. The assistant fixes the upper lid, the surgeon the lower lid, and steadies the eye with one hand, using the needle with the other. After having touched the eye with the needle once or twice to steady it, the surgeon pierces with a spear-shaped or Scarpa's needle the conjunctiva, sclerotic, choroid, retina, and hyaloid membrane at a distance of a line and a half or two lines behind the margin of

* R. Aquæ dist., ℞iv.; Sulph. atropii. neut, gr. i.; Mucilag. sem. cyd., 3 i. M.

the cornea, nearly, but not exactly, in the middle of the eye, a little *above* its middle, as the long ciliary artery runs on each side along the middle of the eye. The needle is to be introduced on the temporal side of the globe, and its concavity placed on the convexity of the lens, after having been carried forwards and upwards. The needle must now be steadily pressed upon the cataract, so as to move it downwards and backwards out of the axis of the vision, where the needle is kept on it for a few seconds until the vitreous humor may settle over it; and then the needle is gently rotated to disengage it, and lifted up a little to see if the lens rises, when the depression is repeated; or, if it does not rise, the needle is withdrawn.

Reclination (*réclinaison*) is a modification of this mode of operating, and is effected by tilting the cataract backwards, and carrying the upper edge downwards. Hard and half-hard cataracts are best suited for this operation.

The immediate effect of depression, or reclination, is striking: the opacity in the pupil disappears at once, the globe resumes its natural appearance, and vision is restored. But there are grave objections to this mode of operating, which is justly considered by many ophthalmic surgeons a less scientific one.

The after treatment consists in keeping the patient quiet, his head being elevated, the eye shaded, his diet low for a few days. Under no circumstances should the eye be suited with glasses before the lapse of some weeks. Iritis, choroiditis, retinitis, may ensue, and must be treated accordingly.

Division, solution, or absorption, is applicable in soft and fluid cataracts. It consists in dividing the capsule, in order to admit the aqueous humor to the lens, which is effected by puncturing the cornea or sclerotic; hence the two modifications, the anterior (*keratonyxis*) and posterior (*scleronyxis*). The latter I propose to perform on this boy. The anterior operation consists in introducing a curved or straight needle through the cornea, and lacerating the capsule of the lens.

Dr. Jacobs' needle is particularly adapted for the anterior operation, which is performed by placing the patient in the usual position, and introducing the point of the needle near the margin of the cornea, or even in the centre of the cornea, as no opacity from the wound has to be anticipated. When the point of the needle is once fastened in the cornea, no action of the muscles can disengage it, and the surgeon has perfect command of the eye. The operator now pushes the needle through the cornea, to bring it in contact with the lens; and that moment the eye is apt to roll inwards so much that the pupil is hid, and the surgeon must rely upon his knowledge of the direction the needle has taken, in order to bring it to the lens. The needle is then turned back, and the capsule gently torn open by its point; then, after pricking and scratching the surface of the lens with a rotating motion of the instrument, it is withdrawn in such a manner

as not to wound the iris. If the lens is a soft and friable one, its fragments fall like snow into the anterior chamber, the operator may push the needle free into the lens, and twisting it round, mash it into a pulp.

If the cataract be a hard one, the capsule should be opened thus to admit the aqueous humor, for softening it and rendering it fit for being broken up on another occasion.

In the posterior operation, the straight needle with cutting edges must be introduced at about a line from the circumference of the cornea, through the conjunctiva, sclerotica, choroid, retina, and hyaloidea; its point should be brought forwards between the iris and the lens; the cutting edges, till now turned upwards and downwards, must be turned backwards and forwards; the crystalline lens, with its capsule, is to be thus divided by two or three gentle strokes.

The solution or absorption of the lens is accomplished more quickly in the anterior than in the posterior chamber; the fragments, however, of an opaque lens, acting as foreign bodies, being apt to produce considerable irritation and inflammation, during which resorption is suspended: caution is necessary in displacing the fragments, which if hard may, although small in size, produce great irritation, and demand immediate removal by a section of the cornea.

Sometimes a peculiar symptom follows in a few hours, generally in the night, after the operation has been performed. The patient is seized by nausea and vomiting. It is advisable to warn the patient that such may be the case. It lasts a few hours, or in some instances even a few days. Effervescing draughts, full opiates, mustard cataplasm to the stomach, and strict quiet, relieve it generally.

This symptom is, as Dalrymple observed, dependent on the poisonous presence of the contents of the capsule; for if such a cataract be removed by extraction, no such state follows. According to this view, Dixon recommends opening of the cornea, for the removal of the fluid, before pain and nausea comes on. Great relief is afforded by this means; and vomiting does not follow, as I observed in several instances, even if the patient be troubled by nausea for a short time.

The time which is required for the absorption of the lens, depends upon the circumstances connected with the nature of the cataract, and upon other individual peculiarities. In some persons the process of absorption will be a quicker, in others a slower one, although in both apparently the same circumstances may exist.

In some instances, a single operation will be sufficient; in others, a repetition of it will be necessary in order to hasten the absorption.

Some surgeons think it sufficient to repeat the operation after six or eight weeks, if there is no evidence of the resorption going on, as flattening of

the capsule and concavity of the iris. Others prefer repeating it every three or four weeks, until complete solution and absorption has taken place. Of course, as long as inflammation exists in the eye, no repetition of the operation should be had recourse to.

Operation for capsular cataract. Secondary cataracts.

The capsule often remains, when the lens has been resorbed, in an opaque condition, occupying more or less the pupil; thus impairing proportionately vision. Sometimes it is thin, semi-transparent, and easier lacerable; sometimes thickened, and corrugated, tough and strong. The former may be removed through the cornea, by the canula forceps; the latter, if unattached to the iris, by the larger forceps, through the cornea or sclerotica. If the capsule or a false membrane is attached to the iris firmly, greater difficulty is experienced in removing it. The pupil may be cleared by the canula scissors, which are introduced through the cornea near its circumference.

These new improvements, beautifully executed by Luer, of Paris, afford the advantage of inflicting smaller wounds in the eye. Needles for eye operations are generally made too large in size. I am inclined to believe that the success of an operation much depends upon the choice of such instruments as inflict the smallest wounds.

THE
CLIMATE,
Diseases, and Materia Medica
OF
THE HAWAIIAN ISLANDS.

BY
LUTHER H. GULICK, M. D.

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INTRODUCTION.

THE following Thesis, dedicated to KAMEHAMEHA III., King of the Hawaiian Islands, was composed in the winter of 1849-50 for the degree of Doctor of Medicine of the University of New York.

My labors upon it since that date have consisted in condensation, in a careful recomposition of the article on the venereal disease, and in several additions to the department of *Materia Medica*.

I have not attempted to post up the Medical History of the Sandwich Islands to a date any later than to the period of the first composition of the essay, though fully aware of the topics of interest which have since arisen.

The auspicious establishment of steam communication between the various Islands of the group on the 16th of November, 1853, will rapidly hasten, if it has not already ushered in, the anticipated period when those Islands are to become a favorite resort for pleasure and health.

I leave my original remark unchanged regarding the protection afforded the Hawaiians by vaccination, for nothing I have yet learned concerning the results of the recent introduction of the disease disproves the supposition; though, doubtless, the preparation might have been better, could the people at an earlier day have been stimulated to greater anxiety on the subject.

I take pleasure in acknowledging my authorities:—*Journal of TYERMAN and BENNET*; *Polynesian Researches*, by ELLIS; JARVIS' *History of the Sandwich Islands*; *Narrative of the United States' Exploring Expedition*; *Report of the Physicians of the Sandwich Islands Mission*, in June, 1839; *Meteorological Observations*, by T. C. B. ROOKE, Esq., in *Hawaiian Spectator*, Vols. I. and II.; *Meteorological Observations*, by Rev. E. JOHNSON, from *The American*

Journal of Sciences and Arts, and found in BINGHAM'S *Sandwich Islands*; Rev. A. BISHOP, on *The Decrease of the Population of the Sandwich Islands*, *Hawaiian Spectator*, Vol. I., p. 52; *Climate of the Sandwich Islands*, by G. P. JUDD, M. D., *Hawaiian Spectator*, Vol. I., No. 2; *Decrease of Population on the Hawaiian Islands*, by DAVID MALO, *Hawaiian Spectator*, Vol. II., p. 121; Rev. HENRY T. CHEEVER'S *Sandwich Islands*; Hon. R. C. WYLLIE'S "Notes" on the *Hawaiian Islands*; *Transactions of the Royal Hawaiian Agricultural Society*, Vol. I., Nos. 1 and 2.

In addition to the above works and essays, which have been directly quoted, the following may also be named as having lent more fullness and accuracy to my statements regarding the climate and causes of depopulation:—DIBBLE'S *History of the Sandwich Islands*; BINGHAM'S *Sandwich Islands*; SIMPSON'S *Sandwich Islands*; and CHEEVER'S *Island World*.

The following acknowledgments, which I am happy to make, exhibit my especial indebtedness to Dr. CHAPIN'S publications and to his personal kindness, in furnishing me facts not otherwise accessible:—No. 39 of *The American Journal of the Medical Sciences*, republished in *The Hawaiian Spectator*, Vol. I., p. 243; *Boston Medical and Surgical Journal*, Vol. XLII., Nos. 3 and 5; *Letters to the Writer*, of *January and February*, 1850.

These form an array of names one may be proud to mention. They certainly demonstrate that my native Islands are as favorable for the development of mental as of physical health and vigor. Nor is there any rashness in affirming, that the "literary capabilities" of the Hawaiian Islands have not yet been fully developed—a fact most gratifying to every Hawaiian.

Regarding this essay, it is most palpable that its only merits can be those of selection and inference. The author will be most happy if this mere outline sketch shall be but the precursor of extended original researches and publication by others, on each of these fruitful and interesting themes.

ASCENSION ISLAND, MICRONESIA, March 1st, 1854.

THE
Climate, Diseases, and Materia Medica
OF
THE HAWAIIAN ISLANDS.

THIS first attempt to collect and arrange systematically all the facts of medical interest connected with the Hawaiian or Sandwich Islands, is necessarily imperfect, but will, it is hoped, be not an unworthy contribution to the department of Medical Topography.

We will first notice the important elements of that which, Dr. T. C. B. Rooke remarks, "yet remains a paradox," viz. :

THE CLIMATE OF THE HAWAIIAN ISLANDS.

Before studying diseases themselves, we investigate their causes, and it is self-evident that a thorough apprehension of the producing and modifying agents of disease in any locality cannot be fully attained prior to a familiar acquaintance with the climate, for under this term are included several most potent predisposing and exciting causes.

The *Locality* of the Hawaiian Islands, geographically expressed, is from $18^{\circ} 50'$ to $22^{\circ} 20'$ north latitude, and from

154° 53' to 160° 15' west longitude. Situated so far both from the eastern and western continents, the group is most effectually removed from their immediate controlling influences so far as climate is concerned. The group lays on the northern boundary of the torrid zone—once each year the sun arrives at the zenith of its meridian. Its climate, so far as affected by relative position, ought, therefore, to be mild, equable, and salubrious—and such it may unhesitatingly be pronounced.

The *Geological character* of the Hawaiian Islands is strictly volcanic, the coralline element being very insignificant. Each island is emphatically rugged and mountainous. On Kauai, Maui, Oahu, and Hawaii, many of the elevations are of considerable altitude. On Maui, Mauna Haleakela is over 10,000 feet high, and on Hawaii, Mauna Loa is 13,760 feet, and Mauna Kea 13,950 feet in height. The arable and habitable parts of the land are in detached portions, thrown in among the hills or on their seaward slopes. The great body of the population occupy positions near the sea, which have an elevation above its level varying from ten to perhaps an hundred feet. In the central portions of East Maui and of Hawaii much higher localities are inhabited. Waimea on Hawaii, the highest village of the group, is about 4,000 feet above the ocean's level. The southern slopes of the islands are exposed to solar influences under much more favorable conditions for warmth than the northern, the rays of light and heat during most of the year striking them in lines nearer vertical, and therefore more favorable for absorption, which, combined with the fact that the most important winds are from the northeast, from which the southern aspects are sheltered by the central mountain heights, conspires to render the southern or leeward aspects of islands generally the warmer and dryer, and the northern aspects the cooler and more humid.

The *Soil* is peculiarly volcanic, consisting of the débris of the primitive rock, light and porous, hence readily parched and apt to take on the form of dust, yet incapable of long

retaining acquired heat. The climate is therefore readily affected, so far as it is influenced by the calorific capacities of the soil.

The *Streams* and so-called rivers, though redolent of poetry, are such insignificant bodies of water as to here deserve scarce a passing notice—from the necessities of the case, they are short and small. From what has been said, lakes would not be expected.

The *Winds* of the islands are important in their relations to the climate, and may, perhaps, be referred to four classes : 1. The Trade Winds. 2. The Land and Sea Breezes. 3. The Southwest Winds or Gales. 4. The Variable Winds.

The *Trade Winds* are most efficient agents for good in the climate of these islands. Situated as the group is, near the northern limits of the trade wind zone, when the trades, with the sun, have made their farthest advances northward, it is brought under their full action ; but when the sun is in southern declension, and when the trades, following it, have made their farthest oscillation southward, the group is beyond their limits and under the action of that cloud-zone, under which there is a constant precipitation of moisture, and which ever hangs over that oscillating line just north of the trade wind zone, where, as by Lieut. Maury, we are taught that the northeast and southwest currents of the upper air meet. The trade winds blow steadily from the northeast about six months. They give way during the months of November, December, and January. October, February, and March, are debated months, during which, however, the trades generally predominate. Having fairly secured their ascendancy in the spring, they blow with remarkable uniformity, and often with “considerable violence, almost amounting to a gale.” These breezes, pure and cool, arrive from their ocean voyage with much of humidity adhering to their unseen wings, from whence it is precipitated in frequent showers that fertilize the whole windward coast. They are the equalizers of torrid heat, and the correctives of all miasmatic exhalations. Their influence is felt on all parts ; but

from what has been remarked of the high midland elevations, it will be readily seen that the southern and southwestern aspects are, in greater or less degree, protected from their direct effects. We therefore find two varieties of climate during the season of their prevalence. The one, on the northern and northeastern shores, cooler and more humid, for here the trades first kiss the green-clad isle, and drop their dewy tears of joy; the other, on the southern and southwestern coasts, dryer and hotter. The whole is expressed by the terms "windward" and "leeward."

These notices of the trade winds must be somewhat modified in reference to Hawaii, the largest and most southern of the group, which is so large (being 88 miles long and 68 wide, having an area of about 4,000 square miles) that it interferes with the force of the trades, and with their regularity, and allows the *Land and Sea Breezes*, in obedience to their own laws, on all its leeward border, and "in some degree even on its northeast coast, where the trades are usually freshest." The trades, in their passages over the comparatively small areas of the northern individuals of the group, are perfectly competent to effecting an equilibrium between it and the surrounding seas, and so, in the main, prevent the series of actions and reactions productive of the diurnal currents. But on Hawaii, the area being much greater, an equilibrium of temperature is not effected by the trades, especially on the southern coast, and immediately the land and sea breezes arise.

Of the *Southwest Winds*, which are the rainy winds, and which, being coincident in time with the superposition of the cloud-zone, produce the rainy season, it must be remarked that they are intermittent, blowing continuously for several days and weeks, and then giving place to the finest of inter-tropic weather, again to return. I quote from Mr. Jarvis' *History of the Sandwich Islands*:—"The southwest wind brings heavy rain, and is usually loaded with a briny vapor, which is deposited upon vegetation and causes it to wither as if touched with frost. Its effects are equally

disagreeable to the human system. Headaches, catarrhs, rheumatisms, and kindred diseases prevail during their continuance. Upon foreigners its influence is very obvious, causing a compression about the head, and an enervation which greatly incapacitates the body for all active business; the atmosphere is thick, raw, and at times feels like the heated air of a furnace. The miasms, arising from the lagoons, which exist to some extent near Honolulu on the sea side, are blown back upon the land. By the natives it is known as 'the sick wind,' and with great propriety."

The *Variable Winds* occur during the same part of the year with the southwestern, viz.: during the winter. The following table exhibits the number of days of the prevalence of each wind.

	Trade Winds.	Southerly Winds.	Variable Winds.
At Honolulu.....1837	295	44	26
" ".....1838	258	71	36
At Waioli.....1845-6	220	146	

Hurricanes and tornadoes, by virtue, perhaps, of the group's remote position from neighboring lands, are unknown, and thunder-storms are rare and mild, which indicates that the electric conditions are subject to no great or sudden alternations—a circumstance favorable to health.

Such *Udometric*, *Barometric*, and *Thermometric* facts as I have been able to collect, shall be presented, together with a few additional details regarding the winds. I very much regret my inability to secure all such tables which I know to be published.

Com. Wilkes, in speaking of the same place, remarks:—"It rains nearly nine months in the year, and, from the rainbows formed by these passing showers, it has obtained its name, which signifies the land or place of rainbows—'Hale-lea.' A few days of dry weather are quite unusual. During three months, included in the above nine, rain fell on fifty-two days; fourteen were cloudy. During the remaining twenty-four the weather was clear, but it rained occasionally at night."

Rev. Mr. Johnson's Meteorological Table for 1845-6, at Waioli, on Kauai, is interesting, as being the only one I have of a locality on the windward side of any of the islands. This table was first published in *The American Journal of Sciences and Arts*. I copy it from Mr. Bingham's "*Sandwich Islands*."

Month and date.	Fah. Thermometer.						Winds.				Weather.							
	Average at 5½ a.m.	Average at 1 p.m.	Average at 6½ p.m.	Maximum.	Minimum.	Mean.	N.E. Trades a.m.	N.E. Trades p.m.	Var. a.m.	Var. p.m.	Rain in inches.	Fair a.m.	Fair p.m.	Cloudy a.m.	Cloudy p.m.	Show. a.m.	Show. p.m.	R'n at night.
April, 1845.	66.0	75.0	70.0	82.0	62.0	70.2	21	20	10	11	14.0	9	4	4	11	10	9	7
May, "	69.6	80.3	74.0	85.0	66.0	74.6	27	27	4	4	6.0	11	10	5	4	14	15	1
June, "	71.6	82.6	75.0	90.0	66.0	76.4	25	27	5	22	4.0	16	17	12	1	10	10	2
July, "	72.0	82.0	75.8	86.0	69.0	76.3	30	30	1	1	5.0	9	7	7	6	9	16	6
August, "	71.6	83.2	76.9	89.0	67.0	77.2	29	29	2	2	5.5	9	15	2	5	7	8	3
Sept., "	71.4	82.6	76.0	87.0	68.0	76.8	28	27	2	2	5.4	16	12	3	4	11	13	1
October, "	69.6	78.5	73.8	84.0	64.0	74.0	18	16	13	15	18.4	11	10	5	3	9	0	6
Nov., "	66.7	78.3	72.0	82.0	57.0	72.3	4	4	26	26	5.2	22	19	2	4	4	4	2
Dec., "	65.2	75.0	69.0	82.0	57.0	69.7	7	7	24	24	5.0	18	10	6	5	6	6	1
January, 1846.	62.0	71.8	67.9	79.0	54.0	67.2	3	3	28	28	4.6	18	7	8	8	1	4	4
Feb., "	63.3	73.5	68.4	78.0	57.0	68.4	10	10	18	18	3.0	16	14	10	10	0	1	12
March, "	63.4	75.8	69.5	80.0	56.0	69.5	18	18	13	13	6.6	15	14	16	8	4	4	5

"At Koloa, on Kauai, the thermometer varies from 50° to 90°." (Jarvis' *History of Sandwich Islands*.)

The following most valuable and complete "General Table of Meteorological Observations at Honolulu, from January 1st, 1837, to January 1st, 1839," was prepared for the *Hawaiian Spectator* by T. Chas. Byde Rooke, F. R. C. S. Honolulu is on the south side of Oahu, and is by far the most important town of the Islands.

1837.	Barometer.			Fah. Therm.			Winds.			Weather.		
	Aver. height at 7 a.m.	Aver. height at 2 p.m.	Aver. height at 10 p.m.	Average at 7 a.m.	Average at 2 p.m.	Average at 10 p.m.	Trades days.	Southerly days.	Variable days.	Fine days.	Rainy days.	Rain during the month in inches.
January	29.970	30.066	30.043	67.9	76.6	71.3	10	14	7	24	3	2.0
February	30.076	30.030	30.060	71.1	71.7	72.7	22	4	2	19	3	1.7
March	30.098	30.057	30.087	69.6	76.6	72.4	19	6	6	22	2	2.5
April	30.128	30.092	30.117	72.1	78.4	75.7	30	0	0	25	4	1.3
May	30.109	30.085	30.097	73.4	80.2	75.0	30	1	0	29	1	0.9
June	30.093	30.061	30.085	76.1	81.9	77.5	29	0	1	21	3	1.4
July	30.115	30.095	30.107	76.4	81.5	77.3	28	1	2	21	7	2.8
August	30.077	30.066	30.087	76.9	82.8	78.1	30	0	1	22	3	2.0
September	30.095	30.060	30.097	76.5	83.0	77.0	29	1	0	21	6	0.7
October	30.116	30.076	30.120	74.8	80.6	76.0	26	4	1	28	1	0.4
November	30.070	30.029	30.071	72.7	77.9	73.8	19	7	4	18	8	4.5
December	30.124	30.072	30.115	69.9	76.5	71.1	23	6	2	27	1	1.0
Average	30.128	30.060	30.090	73.1	79.5	74.8	295	44	26	285	37	21.1

1838.	Barometer.			Fah. Therm.			Winds.			Weather.			
	Aver. height at 7 a. m.	Aver. height at 2 p. m.	Aver. height at 10 p. m.	Aver. at 7 a. m.	Aver. at 2 p. m.	Aver. at 10 p. m.	Trades days.	South. days.	Var'ble days	Fine days.	Rainy days.	Rain during the month in inches.	
January...	30.060	30.028	30.054	69.3	75.6	71.5	21	5	5	25	3	0.8	
February...	30.016	29.970	30.005	71.2	75.3	72.1	20	3	5	18	6	8.5	
March...	30.105	30.004	30.095	72.0	75.1	72.5	22	3	6	21	4	2.1	
April...	30.127	30.095	30.140	71.5	76.7	72.8	29	1	0	27	1	1.0	
May...	30.149	30.139	30.162	73.2	80.3	75.5	25	5	1	28	1	0.5	
June...	30.085	30.040	30.090	75.5	81.7	77.1	20	7	3	17	3	2.5	
July...	30.091	30.068	30.092	76.4	82.5	77.9	26	3	2	24	3	1.5	
August...	30.078	30.052	30.078	77.2	83.2	78.4	30	1	0	28	1	1.2	
September...	30.073	30.035	30.068	76.7	82.6	78.4	27	2	1	25	3	2.5	
October...	30.040	30.021	30.042	75.0	80.1	76.9	16	7	8	20	5	6	
November...	30.041	30.008	30.044	72.3	76.6	73.7	18	9	3	19	5	6.7	
December...	29.978	29.876	29.993	71.5	76.3	73.3	4	25	2	23	6	7.5	
Aver. of year	30.087	30.033	30.072	73.5	78.8	75.1	258	71	36	275	41	49	46.8

Of *Waialua*, on the western side of Oahu, Com. Wilkes affirms, on the authority of residents:—"The thermometer ranges from 75° to 80°, and has not fallen below 55° for several years, and rarely below 60°."

The temperature of *Lahaina*, on the south of Maui, as given by Dr. Chapin (*Amer. Jour. of Sci. and Arts*), corresponds with that of the above-mentioned places. He was guided by Rev. Mr. Richards' tables, kept for ten years, which exhibit "the highest thermometric elevation at 86°, the lowest at 54°, the extreme difference 32°, and no day during the whole period exhibits a difference of more than 19°. June has the highest range, January the lowest." "*Lahaina* is one of the most arid districts of the group, and has seldom rain sufficient to moisten the soil through its whole depth, except in the winter or rainy season. For months in succession the sun is scarcely obscured by clouds, and its exemption from the direct influence of the trades might lead us to expect several degrees of the thermometer above the more wet and windy portions; but so far as my observation has extended, and I have visited every portion of the island, it is not the case."

Of *Kailua*, on the west or lee side of Hawaii, Capt. Wilkes states:—"During the winter the thermometer ranges, at sunrise, from 64° to 78°; at mid-day, from 76° to 85°; at sunset, 70° to 80°. In summer the range is 68° to 80° at sunrise; at mid-day, 78° to 86°; and at sunset, 72° to 81°."

Of *Kaawaloa*, on the lee coast of Hawaii, Capt. Wilkes states:—"The thermometer ranges between 62° and 76° in the winter, and from 70° to 86° in the summer, and seldom above 86° or below 62° ."

"The average temperature of *Waimea*, Hawaii, situated in the interior at an elevation of about 4,000 feet, is nearly 64° Fahrenheit, 48° being the lowest extreme." (Jarvis' *History of the Sandwich Islands*.)

It is to be regretted we have no greater number of statistics regarding the falls of *Rain*, but we shall probably state the truth with sufficient accuracy, if we allow the average annual amount on the windward shores to be seventy-five inches, and on the leeward, twenty-five.

The climate of the Hawaiian Islands is one of the most equable possible. A few comparative statements, principally deduced from the preceding tables and statements, will be of interest.

The *daily range* of thermometer is:—at Penzance, $6\frac{1}{2}^{\circ}$; at Nice, $8\frac{1}{2}^{\circ}$; at Rome, 11° ; and at Honolulu, 12° .

The *mean difference of successive months* is:—at St. Augustine (Florida), $3^{\circ} 68'$; at Penzance, $3^{\circ} 05'$; at Key West, $2^{\circ} 44'$; at Madeira, $2^{\circ} 41'$; and at Honolulu, in 1837, 1.59° , in 1838, 1.77° ; and at Waioli in 1845–6, 1.77° .

The *mean annual range* (I quote from Dr. Lee, in Dr. Copland's *Dictionary of Prac. Med.*) is:—at St. Augustine, 53° ; at Penzance, 49° ; at Key West, 37° ; and at Madeira, 23° . At Honolulu, the extremes, during twelve years, were 90° and 53° , the range being 37° ; during 1837 the maximum was 85° , the minimum was 61° , the range 24° ; and during 1839 the maximum was 86° , the minimum 62° , the range 24° . At Lahaina, during a period of ten successive years, the extreme points of thermometric elevation and depression were 86° and 54° , making a range of only 32° . At Waioli, in 1845–6, the maximum was 90° , the minimum 54° , the range 36° . It is palpable that these statements regarding Lahaina, Honolulu, and Waioli, are by no means as comparatively favorable as they might be, for they either refer to individu-

al years, or embrace periods of ten and twelve years, and give the absolute extremes, rather than the mean annual ranges, as given for St. Augustine, Penzance, Key West, and Madeira. It is my impression that the mean annual range of many Sandwich Islands localities will yet be proved less than even that of Madeira.

The *mean annual temperature* of the West Indies is 79° to 81° , on the leeward side of the Hawaiian Islands about 75° , and on the windward about 72° .

On our present subject Dr. Chapin remarks:—"The climate will be found extremely pleasant and equable, and not surpassed in salubrity by any in the world. Indeed, what place can be found more uniform—the thermometer, during a space of ten years, not having varied more than thirty-two degrees; and where no day during the same period had a variation of more than nineteen degrees; where the same clothing is found comfortable the whole year, and where no other regulator of the temperature is needed than simply to open or close a window."

Dr. Judd, in noticing the amusing observations on the weather one will hear in the course of a half-hour's walk, says:—"One will tell you the weather is very pleasant; another, who, perhaps, has taken a little more exercise than usual, will say it is hot; another, at ease in the shade, will remark it is cool; while another will ascribe to the weather any other quality which his own dullness or buoyancy of spirits may suggest. The fact, most probably, will be, that there is nothing unusual or noticeable in the weather, and it would not be a subject of remark, but for our early habits in a land of sudden and severe changes. The natives seldom speak of the weather; indeed, there is no word in their language to express that general idea, and it is only the occurrence of a storm or something unusual, that attracts sufficient attention to make it a subject of remark."

The Hawaiian Islands have been spoken of as well suited to persons of phthisical tendencies; and, in many respects, they are admirably adapted. Such uniformity of mild tem-

perature is only equaled by few far-famed localities. The period will, probably, soon arrive when consumptives will resort there for health, as they now visit the West Indies or the Canaries. Not every season is equally favorable, however. The dry or trade wind season, from April to September inclusive, will, probably, be found the best, as may be inferred from the following table deduced from those already given:—

	April to September.				October to March.			
	Max. Therm.	Min. Therm.	Range Therm.	Inches Rain.	Max. Therm.	Min. Therm.	Range Therm.	Inches Rain.
Honolulu.....1837	85°	71°	14°	12·6	83°	61°	22°	9·5
".....1838	86°	68°	18°	11·3	82°	62°	20°	35·5
Waiooli.....1845-6	90°	62°	28°	42·9	84°	56°	28°	42·9

Nor are all parts of the Islands equally favorable. Selections must be made, and they can be, though neither Honolulu nor Lahaina, the two most populous and important seaports, is to be most highly recommended.

As the Islands are populated by a race of higher civilization, and as the luxuries of life are multiplied and diffused so that the best adapted localities shall furnish the essentials for an invalid life, and as the facilities for communication are increased and multiplied, the reputation of their most romantic and varied scenery, and their almost unparalleled salubrity, will rapidly make them a noted resort for the united objects of pleasure and health.

THE DISEASES OF THE HAWAIIAN ISLANDS.

With such a climate as just described, it will be asked, what of aggravated disease is to be expected. I reply, that the greatest number and worst aggravations of diseases among the native Hawaiians are due to their miserable modes of living. Did they live physiologically, they themselves would secure the same immunity from acute and destructive diseases that the natives of foreign lands among them enjoy, and might multiply, in contradiction of the nonsensical gibberish which speaks of "the inevitable fate of the Indian race

before the foot of the Anglo-Saxon." Though in very many particulars improved, they still, as a nation, require medical reform. The effort would be an interesting one, to attempt, more directly and systematically than any of their benefactors have yet been able to do, the medical education of the islanders. This must, perhaps, be effected mainly through medical men of their own nation, educated by foreign physicians. And as such men, if of proper moral character, will be of eminent service in the civilization of other Pacific Ocean islanders, we may hope the attempt will soon be systematically commenced.

Their diseases are principally dependent on sudden variations of temperature (this, too, in a climate emphatically uniform)—on irregularity in diet,—and (though it involves a second paradox) on defective cleanliness, though habitually a nation of bathers—"causes which, it is believed, owing to general improvements, are annually less active in their nature, and in time will mostly be checked." (Jarvis.) The Hon. Mr. Wyllie, in his *Notes on the Hawaiian Islands*, remarks:—"Dr. Chapin considers that most of the diseases, to which the natives are subject, arise from cold, bad houses, and bad clothing. The means of preventing the operation of these causes are to be sought for only in the diffusion of wealth, created by general industry, for which there are superabundant elements."

We will first treat of SYPHILIS, pronounced by some, as by Dr. Chapin, "the monster disease." We here enter debated ground; but reliance on the testimony of judicious medical men, whose long residence there gives them authority to speak, will extricate us.

The stereotyped history of Syphilis among them runs thus:—The disease was unknown until the discovery of the islands by Capt. Cook. From his crew it was first communicated to the females of Waimea on Kauai and of Kealeakua on Hawaii, and from thence it radiated through the unimpeded channels of licentiousness over the whole group, among all ranks. From 1778 till now the disease has done

its work of mutilation and death, has manifested itself in all its hideous deformities, and has so destroyed the Hawaiian constitution that the nation is spoken of as physically rotten, and that the hopes of continued national existence are destroyed. I quote the *Narrative of the U. S. Ex. Expedition*:—"Mr. Whitney imputes this rapid decrease to foreign vicious habits, and both foreign and native authorities attribute the introduction of the venereal to the visit of Capt. Cook. This infection, brought to these Islands by the first voyagers, may now be said to pervade the whole population, and has reduced the natives to a morbid, sickly state; many of the women are incapable of child-bearing, and of the children which are born only a few live to maturity." Dr. Chapin, in *The American Journal of Medical Sciences*, says:—"With such an introduction, the venereal disease has for the past fifty-seven years continued to spread and increase; perpetuated and extended, too, by almost every vessel which touches at the Islands, till words fail to express the wretchedness and woe which have been the result. Foul ulcers, of many years' standing, both indolent and phagedenic, everywhere abound, and visages horridly deformed, eyes rendered blind, noses entirely destroyed, mouths monstrously drawn aside from their natural position, ulcerating palates, and almost useless arms and legs, mark most clearly the state and progress of the disease among that injured and helpless people." Rev. Artemas Bishop remarks:—"Their previous looseness of morals formed a ready conductor for the disease which was introduced by the first ship which touched here, and from the account given by the natives themselves, the consequences were incalculably more dreadful than had been feared by Capt. Cook and his associates. The deadly virus had a wide and rapid circulation throughout the blood, the bones, and sinews of the nation, and left in its course a train of wretchedness and misery which the very pen blushes to record. In the lapse of a few years, a dreadful mortality, heightened, if not induced, by their unholy intercourse, swept away one-half the population, leaving the dead un-

buried for want of those able to perform the rites of sepulture." The following, by David Malo, a native Hawaiian writer, is worthy of quotation, for its just recognition of God's moral discipline exerting itself through the ordinary and natural laws of disease:—"This disease has become prevalent among the people, and even children, and all the people of the Islands are miserably diseased; and it is clear that, from the arrival of Capt. Cook to the present day, the people have been dying with the venereal disorder. Foreigners (David Malo, would, of course, make many exceptions) have lent their whole influence to make the Hawaiian Islands one great brothel. For this cause God is angry, and he is diminishing the people, and they are nigh unto desolation."

Though many of the above statements are incontrovertibly true, they, probably, convey an exaggerated view of a great and real evil. Knowing that the disease had been introduced and had been disastrous, many an ulcerous leg and ophthalmic eye, and nearly the whole body of deformities, congenital and acquired, together with all the barrenness of the females, were imputed to the monster disease. Still we shall not deny it the character of an important individual among their maladies, and one that, with several other grave causes which have each reacted on the other for evil, has materially assisted on the nation's calamity.

Another series of statements must also be subjected to doubt,—namely, that which, without broaching the involved question as to the previous existence of a venereal disease, would make that disease introduced by Capt. Cook different in kind from any thing which could have preceded, and very different in degree, if not in kind, from any thing now existing. This opinion need not, perhaps, be more particularly discussed in this paragraph, as our remarks on the third series of statements will further elucidate this.

The philosophical query, as to the true period of the inception of the disease among the Hawaiians, involves a discussion of the long-mooted question of its origin among Euro-

peans—a debate we shall sedulously avoid. Whatever may be the theory of its existence in Europe or at the Sandwich Islands, anteriorly to the respectively accredited periods of 1493 and 1776, the fact seems undeniable, that at about those dates a disease, supposed to have been before unknown, spread with marvelous rapidity, attacking primarily the genitals, but introducing as accompaniments or sequelæ “excruciating nocturnal pains, corroding ulcers over the whole body, affections of the throat and nose, and, very frequently, death.” (J. Bacot.) Whatever we may deem probable, or may demonstrate as certain, as to the anterior existence of genital diseases, it must be admitted, that, as in Europe, so at the Hawaiian Islands, there came a time when particular morbid developments on and near the organs of generation received unusual attention and were attended by constitutional symptoms unnoticed before, and by remote local diseases of unprecedented phagedenic character—that this new disease (as it was supposed to be) was contagious in a wonderful degree, and spread through the nation, and was a source of general dread, often proving miserably fatal. As proofs, we need but refer to such statements as just quoted from various residents, which are undeniable and decisive on these points, whatever we may judge as to their over-statement regarding the national degeneracy being mainly attributable to this monster.

With regard to the present condition of the disease, it seems also undeniable that as in Europe, so at the Sandwich Islands, Syphilis has ceased to be a dread, and though there be many syphilised constitutions, the immediate developments of the disease are not usually found save in the channels of systematic prostitution. And, in confirmation, I will quote, first, a report made in 1839, before the annual meeting of the Protestant Mission of the Islands, by a committee consisting of the physicians of the mission, who, at that time, constituted by far the majority of the resident physicians. I transcribe a considerable portion of the report for its intrinsic importance, though the last sentence quoted is that bearing directly on the subject at issue.

"1. That they find the climate of the Islands highly favorable to the development and perfection of the animal economy, the mean temperature being within a few degrees of that point which physiologists consider most favorable to human life, and free from those sudden and great changes to which most other climates are subject.

"2. That notwithstanding the favorableness of the climate, they find an unusual amount of disease among the natives, especially of the sub-acute character, which, though for the most part not very painful, tends always to undermine the constitution and pave the way to a premature grave.

"3. That the immediate causes of most of their maladies are plainly ascribable to their frequent violation of the first principles of correct living; to their low estimate of life, and recklessness of themselves; to their wretched habitations, which furnish little comfort or protection; to their practice of lying on the damp ground; to want of protection by clothing, in exhausted conditions of the system, against vicissitudes of the weather; and to their poverty, which keeps them strangers to necessities and comforts.

"4. That we have witnessed no fatal epidemics since we arrived at the Islands, and that, of those diseases depending upon a specific contagion, almost no lives are now lost. * * The venereal disease, which, probably, did once make considerable havoc among this people, seems now so far to have worn itself out, that we seldom see it as recently contracted, except about the harbors, and there not extensively, and very few deaths from it have occurred in our practice. Neither do we perceive that this disease materially retards the increase of population on these Islands."

Dr. Lafon, several years a resident at those Islands, affirms, in reference to abortions, that they are no more frequent than elsewhere, and that they very rarely have connection with Syphilis; and as to the effects of the disease on the progeny, it also is infrequent. He unhesitatingly asserts that mistakes are made in attributing to Syphilis the great body of ulcers and tumors and other occasional results of the disease.

Mr. Jarvis, in his History, says:—"The venereal disease has almost exhausted itself, and it is rarely to be met with, except about the sea-ports, where the virus is kept active by augmentation from foreign countries. Even in these places it does not prevail either extensively or fatally, nor can it be said materially to retard the increase of population at the present time."

These authorities, who bring with them every element of reliability, agree in the assertion that primary Syphilis is comparatively rare. Who will, then, question the direct and inevitable inference that secondary Syphilis must be at least as infrequent. And if this be established, it will be seen, as before intimated, that that class or form of statements which pronounces the Hawaiian constitution syphilitically rotten, and which solves the problem regarding depopulation by the asserted prevalence of the venereal taint, must be in some degree erroneous. With the above facts before us, the national constitution cannot be affirmed to be syphilitically destroyed, unless the theory be developed that individuals and a people may be so tainted by this disease, through their ancestors, as to lose their powers of procreation. Such a theory will, so far as I am aware, be a new one to the medical world. Without doubt, syphilitic children of syphilitic parents attain to less vigor and are more liable to disease, and, so far as these causes are operative, may be possessed of less virility; but have we evidence of a specific effect on the procreative faculties of the descendants? Is there naught that destroys virility but Syphilis? And if such a fact or law as the above theory be yet proved, we must neither then nor now ignore the much more palpable and better known causes to which we shall presently allude.

It will be noticed that our authorities speak of the disease having "worn itself out," and of its having "exhausted itself." These expressions cannot have been intended by their authors to be taken in a rigid medical construction, as though it were proved that this virus did, by any law in any community, lose its inherent virulence. It will be suffi-

cient to say of the period of aggravated syphilitic affections at the Hawaiian Islands, as of that in Europe, that by a better acquaintance with the medication of the disease, and with the laws of its propagation, and also by the consequent removal of the veil of mystery, the era of dread and devastation was passed. It may also be suggested that Syphilis, like other diseases, may have its periods of aggravation from unknown epidemic causes, and that the syphilitic periods of Europe and the Hawaiian Islands may have been complicated with such causes. It must also be borne in mind that the morals of the people have since that time been improved—a cause which would alone tend to lessen the evil. It must also be noticed that at the Sandwich Islands, during the period in question, there existed certain political and civil conditions which served as great aggravations not only to the syphilitic but to other affections, and that these conditions are not now as disastrous as then. We pass on to a more particular consideration of these conditions.

The question now presses itself as to those causes of depopulation, to which allusion has been made, on the supposition that they were of themselves sufficient without an overpowering and still active syphilis. I answer it by quotations of some length from Mr. Jarvis' *History*, and will leave it for others to judge whether they are not conditions sufficiently disastrous not only to directly diminish the number, but even to lessen the fecundity of the nation, especially when we superadd the readily acknowledged disaster of Syphilis in its usual and well known degrees.

“Since the time of Cook a rapid decrease has occurred. Neither is this melancholy result of difficult solution. The population of the Islands probably never amounted to what, with the aids of civilization, they could be made capable of supporting. During their heathen state, though divided into many hostile tribes, perpetually engaged in warfare, their battles, from the imperfection of their weapons, were comparatively bloodless. That very condition served to develop enterprise and a national spirit, though accompanied

with beastly excesses, and thus a spirit favorable to physical growth was stimulated. The boundless hospitality which every chief was obliged by the spirit of his race to exercise, and which prevailed even among the canaille, always found food and shelter for the oppressed. A man dissatisfied with one master had but to flee to another, and he was sheltered and welcomed. Taxes were heavy and much labor required, but as it was generally for the support of the whole, an interested motive existed. The same work which would destroy the energies of a man who was to receive no reward for his toil, would produce health and cheerfulness in one who had an interest in the result. Every individual had that to some extent in the wealth and success of his chief; hence a patriarchal feeling was developed, which, with long used and uncontested power, will sufficiently account for the deep reverence, fear, and canine-like attachment, with which the common people regarded their superiors. Exceptions to this no doubt prevailed, and much misery was the consequence; but as a general principle it was correct, and stands in strong contrast with the relative condition of the two classes, after a thirst for foreign wealth was developed by intercourse with whites. A grasping, avaricious disposition succeeded; ends were to be attained regardless of the means used. The little natural human feeling the chiefs possessed, was extinguished by an all-powerful passion for gain. Interested foreigners stimulated this desire; cargoes of rich goods were brought, luxuries displayed, and no means left untried to excite their cupidity. The unfortunate result is well known. The whole physical resources of the kingdom were over-wrought, and women and children were taxed beyond their powers. Sandal wood was to be collected; mountains and valleys almost inaccessible were to be penetrated, and heavy loads borne on bleeding shoulders to the sea-side. Like the children of Israel, their toil was doubled and their sufferings found no consideration in the eyes of their cruel task-masters. Cultivation was neglected, and famine ensued. Multitudes perished under their burdens;

others left their homes and wandered like wild beasts in the depths of forests, where they either slowly sunk under the horrors of want and starvation, or sustained a miserable existence on roots and wild fruits. Blind to the consequences, the chiefs continued the same policy. Debts were contracted which must be discharged, and increased taxes were imposed. No property was safe. A native could neither hold nor acquire—all was his chief's—even his children became a source of additional suffering, for every head was taxed!—infanticide greatly increased;—parents gave away their offspring, and the natural feelings of the nation were crushed beneath this iron despotism. Life became a wearisome burthen; numbers of the most active sought safety and employment abroad. The first effects of Christianity added to this already intolerable load. So long had this system been pursued, that no other plan of public works, than the compulsory labor of the whole population, seemed feasible. Regardless of the instruction and advice of their religious teachers, they added to their labors the toil of building churches, school-houses, and other works, necessary in themselves, but erected by unholy means. This system prevailed in later days, with mitigations, however, until 1838, when it began to give way before the combined influences of the mission and foreign residents, and the more enlightened efforts of the native population.

“Before Cook’s visit, diseases were few and simple. Subsequently they increased in number and virulence, while the remedies and knowledge necessary for arresting them remained unknown; the fatality attending novel illness, the progress of which they knew not how to arrest, produced a deep and often fatal spirit of despondency.

“Alcohol and licentiousness have usually been considered the most aggravated causes of depopulation; but their influence has been exaggerated. The habits of the natives in both respects are now better than they were before their discovery, when drunkenness, produced by the use of *awa*, and promiscuous intercourse and incest were almost parts of their natures.

‘A powerful agent, though one the effects of which have been greatly overlooked, is the partial adoption of foreign clothing. This may seem paradoxical; but unfortunately it is too true. * * Many would wear their clothes but part of the time, and then, finding them inconvenient from extra heat or cold, throw them aside altogether. The utmost irregularity prevailed, not only from poverty, but from carelessness and from ignorance of the results. * * Their constitutions, already enfeebled, from causes before mentioned, could ill bear such treatment. Colds and fevers greatly increased, and of a more fatal tendency. Trivial predispositions to disease were aggravated, and death was the frequent result of attacks which the slightest prudence could have obviated.

“Much else might be named, which would cause the philanthropist less to wonder why they decrease, than that it should have been so slight in comparison to the many causes so actively at work to create it. * * It must be remembered that these causes were all additional to those which existed prior to their discovery, and which were of themselves sufficiently active to prevent any rapid increase.”

The Hon. R. C. Wyllie, speaking of the supposed depopulation by Syphilis, says:—“There no doubt has been, and, I fear, still to a great extent exists a cause, in the laxity of native morals, why that disease should be propagated with unusual universality, and that very cause will add to the effect of disease in preventing offspring; but the outward appearance of fat and health, more general here amongst the natives than amongst the Indian tribes of Mexico, or any country in South America, is opposed to the belief of such an inward rottenness as could render the race unprolific, without the influence of other causes.” The opinion of a gentleman of such eminent intelligence and general and medical information weighs much.

It is but proper that, before leaving this topic, I refer more particularly to Dr. Chapin’s articles, especially to that in *The Boston Medical and Surgical Journal*, Vol. 42, No. 5,

where a greater potency is ascribed to the venereal than I have admitted. He maintains the syphilitic origin of a large number of affections, because "mercurial remedies" alone effectually reached them; and upon this the query rises, whether this be the best or proper test for the diagnosis of venereal. But though his diagnosis be both admitted and proved, it still remains to be established that the lack of fecundity among the Hawaiians, as compared with "the lowest class of Irish, and with the blacks of our own southern States (neither of whom are more moral, or regular in their lives, nor more temperate, nor better fed)," justifies us in counting Syphilis "the most prominent cause of disease at the Sandwich Islands." I trust the above discussion has gathered light on the subject.

Having thus dismissed the consideration of Syphilis, I shall not find a fitter place than the present to express a thought concerning the prophecy of the extinction of the Hawaiian race, founded on the ancient canon that all so-called Indian races must vanish before the Anglo-Saxon. The canon is based on an unfair and unchristian induction, which involves the supposition that Anglo-Saxon intercourse must always be attended by those Anglo-Saxon immoralities which have been the real destroyers, and that it is impossible in any instance to correct the effects of such commerce. Whatever shall be the ultimate fate of this interesting race, the efforts of no philanthropists should be damped by unfounded predictions. There is yet hope for a small remnant of this and other races which Anglo-Saxon would-be-philosophers have destined to annihilation. I again quote from Mr. Jarvis, the able and impartial historian. "Their depopulation was more rapid, as far as can be ascertained, in the reigns of Kamehameha II., and his successor Liholiho, than at a more recent period. As Christianity and civilization have advanced, in just that proportion has this mortality ceased. Their effects are of too recent a nature to predict the final consequences, but it may be confidently expected, that as the fatal tendencies are counteracted, and others

allowed to operate, good results will ensue." "Evil as the most active principle may for a while riot uncontrolled, counteracting and more powerful tendencies are at work, which must eventually neutralize and overcome the former."

SCROFULA, considered apart from consumption, is reported as one of the frequent causes of disease among the native population. Dr. Judd says:—"Scrofula is very common in the various forms of goitre, ulcers, tabes, etc." Dr. Chapin says:—"Scrofula is not only frequent, but extremely malignant." Its cause is a little obscure, though it is, perhaps, readily enough given, if we use the general language which the custom of medical authorities on this subject allows us. We can, without difficulty, enumerate a number of debilitating causes; and if, with Dr. Alison, we limit "the causes of debility" to those "acting permanently, or habitually for a length of time, although not so powerfully as to produce sudden or violent effects," we may refer to their miserable houses, which are no sufficient protection from the weather, and in which they sit and sleep on the ground, with only a mat or two intervening. It is, indeed, their universal habit to make the ground their seat, which is everywhere more or less damp. Com. Wilkes, in speaking of their diseases, says:—"Many of them are brought on by living in their grass houses, which are by no means impervious to the weather. Another frequent cause is the partial decomposition of the grasses with which they are thatched on the roof and sides. In passing into them I invariably experienced a smell of mustiness, and a mouldy appearance is frequently seen about their mats and tapas." Says Mr. Jarvis:—"The houses of the common orders were mere hovels, made of straw, thatched upon a light wooden frame. They were low, small, and damp, and generally filthy within and without."

Their clothing, too, was partial and insufficient. The primitive Hawaiian costume, which is now rapidly giving place to more civilized habits of dress, was prepared of the bark of trees, and consisted of a sheet tied at two corners and thrown over the shoulders, with another narrow strip

wound round the loins and passing between the legs—or, for a female, a long piece about a yard in width, wound about the lower part of the body and descending to the knees, with, perhaps, a sort of shawl of the same.

Their food, too, was irregular, often “bad and deficient,” and always principally “vegetable food.” If these, as Mr. Philips contends, are productive of scrofula, we certainly can account for its existence among these islanders, for their food was almost exclusively vegetable, being preparations of the *arum esculentum*. Fish was frequently an adjuvant, but it was rather an occasional than constant article of diet.

But the question arises, how, if, indeed, their modes of domiciliation and clothing and dieting be efficient producing causes, did they once, as a nation, thrive with comparatively little scrofula, though their houses and modes of dress and articles of food were essentially the same. The difficulty is, I think, satisfactorily met by the statements regarding the causes of depopulation already made. Their political conditions for long years rendered their preparations of food less ample and timely, their houses even less comfortable and habitable, and their clothing less complete and protecting.

Whether marriages between different races tend, as is generally supposed, to produce the scrofulous diathesis, the fact is interesting that, at the Hawaiian Islands, the children of alliances between the natives and Chinese, or negroes, or any of the European nations, are far more healthy, and are better physically developed than those of pure Hawaiian blood. This may, however, only be because the indigenous race is so far exhausted that foreign blood is, with all its disadvantages, better than their own; or, more probably, because such descent generally receives more appropriate and efficient parental care.

Malarious Diseases, of all types, are rare, if not unknown—either because malaria is not there present, or because, if generated, it is so quickly dispersed.

How simple and beautifully circular the usual process of reasoning on this subject! Wherever malarious diseases

prevail, there certainly malaria is present, and if, in investigating the causes of disease, we inquire for malaria, its absence is conclusively shown by the absence of recurring fevers, even though, as at the Sandwich Islands, sheets of stagnant water expose their surfaces to the constant action of a tropic sun, and though the inhabitants build their houses on embankments in the midst of the exhalations (either malarious, or the opposite), which must constantly rise.

Their "taro patches" are artificial ponds of water in which the taro is planted. These, in advantageous localities, are crowded very closely together, and present very considerable areas of water, and in among these ponds the natives very frequently live, enjoying as perfect health as elsewhere.

This might be urged as a proof of the fallacy of the malarious theory of periodic fevers, yet without much force, for even if it be proved that malaria is here generated, the fact of its harmlessness is readily explained by reference to the influence of the winds, which are felt more or less constantly and directly on all parts of the groups. On this subject Dr. Chapin makes an important remark:—"It might be an interesting subject of inquiry, which I have not seen discussed, why the islands generally, throughout the world, if we except those spots covered by cities, made pestilential by crowded populations, are so free from those poisonous exhalations which abound on the continents, so generally between the tropics, and, during the warm weather, over such an extent of the temperate zones, especially along the rivers." "On the continents are large marshes, putrid with vegetable and animal decomposition, draining into streams nearly stagnant from the sluggishness of their courses, whilst on the islands, swamps are less abundant, and the streams are short, fresh, and rapid, and whatever malaria is generated is quickly diluted, and borne off by the passing sea breezes, and thus rendered innocuous."

But we may even question whether the same bodies of water in the same soil, in regions remote from the trades,

would be prolific of malaria; for, first, the ponds are every few days receiving fresh supplies of water; and, secondly, the soil is not that which, from its extreme richness in vegetable matters, would be supposed able to part with much that is noxious; and, thirdly, the ponds are kept almost constantly full, so that parts once moistened are kept submerged. Besides these taro patches, the few possible sources of malaria are utterly insignificant.

"With so entire an exemption from the existence of miasmata, there is also an entire exemption from those affections induced by it. Malignant bilious fevers do not occur, and * * * derangements of the liver and biliary organs do not prevail, neither are the stomach and intestinal canal, and other organs of the abdominal viscera subject to the numerous and complicated affections so common in every miasmatic region." (Dr. Chapin.)

Yet in 1803 or 1804, a pestilence raged which has by some been supposed to have been yellow fever, and by others, Asiatic cholera. "In the year 1804, when the late King Kamehameha was on his way from Hawaii to invade Kauai, he halted with an army of eight thousand men at Oahu. The yellow fever broke out among the troops, and in the course of a few days swept away more than two-thirds of them." (Journal of Tyerman and Bennet, vol. 2., p. 48.) "The great pestilence of 1803 destroyed multitudes, and has been supposed to have partaken of the character of the Asiatic cholera." (Jarvis' *History*.) Of this disease we can only say, that it probably was not either yellow fever or cholera.

Other forms of *Fevers*, not exanthematous, though "the most frequent and numerous class of diseases among the native population, are by no means the most malignant and fatal. * * * The excitable state of the system which predisposes strongly to febrile attacks, is not common at these Islands. The continued and oppressive heat is there not sufficient of itself to produce it, and the universal custom among the people, to repose during the hottest part of the

day, aids in counteracting other unfavorable influences. The simplicity, too, of their diet and habits of life is not calculated to promote a state of excitability." (Dr. Chapin.) The fevers are apt, I should judge, sometimes to take on the symptoms generally termed typhoid, though malignant typhus is rarely seen.

Of the *Exanthematous Fevers* little can be said, save that they have at occasional intervals been introduced. The natives seem never to have had them previous to the discovery of the Islands, and their insular position protected them for some time subsequently.

In 1848, the *Measles* in some unknown way made its advent among the unfortunate islanders. They had never before seen the disease—the symptoms were to them new and singular. It was difficult to impart to the masses the proper mode of treatment, and they, in their ignorance, during its eruptive period, under the disagreeable sensations of heat, frequently made applications of or immersed themselves in cold water, making it tenfold more than usually fatal.

Small-pox has never spread among the people, and should it now arrive they are probably quite well prepared for it by vaccination.*

In 1839, *Mumps* were introduced (though I violate order

* In May, 1853, the small-pox appeared for the *first time* on the Sandwich Islands, and it spread with fearful rapidity and unprecedented mortality, about 6,000 of the unfortunate victims of the disease, or *eight per cent. of the entire population*, having been swept off in the space of eight months.

The malady is believed to have originated on the Islands from fomites, that had been conveyed from San Francisco to Honolulu in a chest of cast-off clothing. As the disease extended in Honolulu and its vicinity, the natives became panic-stricken, and fled in wild confusion and alarm to remote districts of that Island (Oahu), and to the other Islands; thus unhappily conveying the pestilential infection throughout the entire group of Islands, and to almost every community. The disease was of the gravest type, and was manifestly rendered thus by a most marked variolous epidemic constitution.

I have deemed it important to add to this valuable essay of my friend, Dr. Gulick, the above brief notice of the most terrific and fatal epidemic of variola that has ever been recorded.

ELISHA HARRIS.

in noticing it here), and "prevailed very generally, and in some cases terminated fatally through mismanagment."

Rheumatism is a frequent malady among the islanders, as a consequence of their irregular life and extreme imprudence in spending their nights on the ground, and of "their habits of continuing long in the water and exposing their bare bodies to strong currents of wind, when overcome with heat and covered with perspiration."

Dr. Chapin speaks of its "very frequent occurrence, notwithstanding the very prevalent belief that it is almost peculiarly a disease of cold and variable climates, and is rarely met with in warm and uniform climates." He remarks with great justness that—"The constitution becomes so impressible in warm climates, that very slight variations in the atmosphere are as severely felt as the greatest changes with us." And from this prevalence at the Sandwich Islands he infers its presence "at the adjacent islands, and at all places throughout the inter-tropic regions, where the same exciting causes exist." At these islands "the disease is usually mild in its attacks, soon passes off, even without the application of medicinal means, and is seldom followed by severe secondary effects."

Primary derangements of the *Nervous System* constitute but a very small part of their diseases. *Insanity*, as might be expected from their quiet, simple mode of life, is not frequent. Among the females, *Hysterical* tendencies are not marked. *Chorea* is occasionally met with. *Paralysis* is more frequent, and Dr. Lafon attributes it to their long-continued sitting and sleeping on the damp ground, by which, not only their fibrous, but their nervous tissues are affected.

Pulmonary Affections are frequent and important. In an address before the Royal Hawaiian Agricultural Society, the Hon. Luther Severance says:—"If every native would wear a woollen shirt, and sleep at night under a woollen blanket, I think there would be less of asthma and other affections of the lungs, induced as these diseases probably are by exposure to the strong winds, while the pores of the

skin are opened by profuse perspiration." (*Transactions of the R. H. A. Society*, Vol. 1, p. 2.)

Chronic Bronchitis is so frequent and universal among the Hawaiians as hardly to receive attention. The mucous surface of their lungs seems to be peculiarly susceptible to external influences. Dr. Lafon, speaking of the "day-break prayer-meetings," says that for the first twenty minutes it was generally scarcely possible to proceed with the religious exercises, from the incessant coughing of the congregation. It was as though each one was under the necessity of expectorating a certain amount of mucus before respiration could be comfortably carried on. The causes are evidently those already so frequently mentioned—their unhealthy exposures both within and without doors.

Catarrhs are of course to be expected, though mild, and generally the result of exposures and sudden alternations of temperature. Dr. Judd remarks:—"The *Influenza* (epidemic catarrh) usually prevails every spring." Dr. Chapin speaks of them as "usually mild in their character, ephemeral in their existence; they easily yield to immediate applications and rarely pass into the more inveterate and fatal stages of pulmonic disease." Some, however, of these epidemics are much more serious, and their effects remain long after their departure. About four years since (1846) an epidemic of this kind prevailed over the group and was in some cases fatal, from untoward complications and bad management. And again in 1848-9 another epidemic arrived as a successor upon the measles, and was more than usually fatal. It would be of some interest to ascertain whether these influenzas have any relation to the direction of the winds, or, as has been suggested, to volcanic exhalations. The remote position of the group is very favorable for the investigation of the causes of disease, especially of the mooted questions regarding the contagious and epidemic character of maladies.

Asthmas are enumerated by writers among the diseases of the Sandwich islanders; but the term is used so indefinitely that

little can be learned from the statement. Dr. Judd, speaking of the annoyance from dust, says:—"It is, no doubt, a very efficient cause of the frequent occurrence of asthma among the natives." Dr. Chapin mentions, as a cause of asthma, "a habit, among the chiefs and wealthier portion of the common people, of inordinate eating, amounting even to gluttony," when "their capacious stomachs are distended not less than four or five times a day with truly surprising quantities of fish and poi."

Pneumonia and *Pleurisy* are mentioned: they cannot, however, be called zymotic diseases—they are, rather, accidental.

Croup among the natives is usually fatal. Dr. Chapin mentions its having prevailed epidemically once during his residence there. "Hoapili-wahine, a chief woman of high rank, upwards of seventy years of age, died of this disease in January, 1842." (Jarvis.)

Whooping Cough has been once prevalent, but soon disappeared.

Phthisis Pulmonalis is a very rare disease at the Hawaiian Islands. Dr. Judd says:—"This comparative exemption of a population—which is allowed on all hands to be fast wasting away—from one of the most fatal diseases of the United States and England, affords evidence that the climate is unfavorable to it."

An investigation of the causes of their entire exemption from pulmonary tuberculosis is one of much interest, especially if that disease is to be considered as dependent upon the scrofulous diathesis. The uniformity of temperature is certainly favorable, but why are not the producers of the other varieties of scrofula productive also of this? Is it that, for the development of phthisical scrofulosis, a close impurity of air is generally essential, by its immediate interference with respiration, and so, as it were, by centering upon the lungs in a primary degree the development of the scrofulous diathesis; while, if the glandular system be most impeded in the performance of its functions, through and

upon it will the diathesis be principally exhibited in specific scrofula? If this be accepted, the out-door lives which the Sandwich islanders live may be supposed to preserve them from that imperfect respiration, and so, from consumption, notwithstanding the untoward effects of many of their other habits, while the glandular system succumbs before the ready waiting enemy, incapable of receiving such relief and palliation of evil from fresh air, and even from that very exposure being made still more liable.

Foreign residents are completely exempted from such tendencies. Several members of the mission have entered the field with pulmonary affections, who were regarded as doomed to certain and premature death if they remained in this country (the United States), who now enjoy good health, and are entirely free from any abiding symptoms of disordered lungs." (Dr. Chapin.)

The remarks previously made, regarding the adaptation of the Hawaiian climate to persons of phthisical tendencies, are applicable here. The entire absence of Phthisis among the foreign and native inhabitants, with the mentioned instances of cure effected by a residence there, confirm the anticipations we might found on the mild uniformity of the climate.

There is one disadvantage, however, mentioned by Com. Wilkes, namely, "the great difference in the degree of moisture which exists within a few miles." This must be acknowledged a drawback, and though localities may be fixed on, enjoying proper mediums of moisture and heat, it would be difficult to confine a patient closely to them. But let me suggest that the mere fact of considerable moisture is not conclusive against a place as a residence for consumptives, especially if it fall, as it does at these Islands, during the summer season, in brisk refreshing showers, followed by beautiful sunshine, and leaving all nature revived and invigorated.

I repeat, that the Sandwich Islands will, as facilities of travel increase, become one of the places of resort for

invalids, especially during the summer season; for the beauty, grandeur, variety and novelty of the scenery will alone be a potent attractive, and the journeyings to enjoy it be efficient remedial agents.

Derangements of the functions of the *alimentary canal* are numerous, and frequently fatal among the islanders. Their irregularities in diet, with their habitual violation of all prudential laws, are causes sufficiently comprehensive.

Diarrhœa and *Dysentery* are common. "Beside the usual exciting causes which prevail in most places, they have an additional fruitful source, in a blind and barbarous practice of using immoderately the most powerful and drastic cathartics. I have known a case in which the average operations of four cathartics, given to disperse dropsy, were twenty-one, the aggregate eighty-four; and another case in which a man, from a fear that he would be sick, took such an enormous dose of the calebash, as to produce a hemorrhagy, which proved fatal within a few hours." (Chapin.)

Hepatitis, with all the other affections of the liver, are seldom met. The climate seems to be proof against that monster of civilized life—"the liver complaint"!! This exemption extends to all who reside there. "The frequent occurrence in hot climates, is ascribed by Dr. Saunders and others to the prevalence of a peculiar miasm in those regions, and if this be true, hepatitis will not be expected to predominate at the Sandwich Islands, where there is no evidence of any miasm whatever. Indeed, hepatic disorders are not merely uncommon there, but they do not appear to be incident to those seas. The Pacific is thronged with American and English whaling vessels, which cruise from three to four years, and, as they change their ground to the north and south of the equator, with the change of the seasons they are continually exposed to the hottest latitudes, and are much of the time in the torrid zone. Of these a large number touch semi-annually at the Islands for supplies, and though my practice among the seamen has been extensive, I have been called to prescribe for only two or three

cases of inflammation of the liver, and in no instance have I met with the disease in its acute form. The heat to which the sailors are subjected, during calms at sea, is often intense; and if the existence of hepatic disorders is owing mainly to the close sympathy between the biliary and respiratory organs, the etiology proposed by Dr. Johnson, I certainly ought to have met oftener with it. * * Two or three gentlemen of the mission, who had chronic diseases of the liver when they went to the Islands, have not only spent several years without any exacerbation, but one of them is quite relieved from the complaint." (Chapin.)

"*Worms* in the intestinal canal are not, so far as my observation has extended, of usual occurrence. The children of the mission, who numbered more than sixty, were entirely exempt, and no case of the existence of worms among the native population came to my knowledge. One individual, a native of this country, who had been for several years a resident of the Islands, was affected with ascarides, and this was the only case I met with." (Dr. Chapin.)

Diseases of the Eye are frequent. Blindness is not uncommon. "Ophthalmia, of the purulent form, abounds in every portion of the group, and opaque corneas and thickened coats of the eyes are very numerous. The old and the young are alike affected with this disease; very small children are occasionally met with nearly blind with its effects. I at one time attributed its prevalence to the effects of the clouds of sand, often raised and blown about with great violence by the trade-winds; but finding it equally common in those districts where frequent rains prevent the dust from ever rising, there appeared to be no other cause so active as the trade-winds, which come mingled with salt spray." (Dr. Chapin.)

Cutaneous Diseases are said to be numerous, though the names of varieties are not mentioned, except those of "*scabies*," and a disease called "*poupou*," spoken of by Com. Wilkes. "Though the Sandwich islanders are remarkably fond of the water, and are fastidiously particular in their prac-

tices of washing and bathing, they are, nevertheless, extremely filthy and squalid in many of their habits of life. With their beasts and fowls in the same habitation, and not unfrequently on the same mats with themselves, their often-repeated ablutions will be regarded as timely. The kapa, or native cloth, used by the inhabitants, is worn without cleansing, till, having become foul with vermin and dirt, and too ragged to serve longer the purposes of covering or protection, it is lain aside. Hence diseases, induced or exacerbated by such causes, have at those Islands a fruitful soil, and flourish luxuriantly. The *itch* is extremely prevalent, and often assumes a virulence unseen in this country. The pustules sometimes, becoming confluent, are converted into large and troublesome ulcers." (Dr. Chapin.) These details regarding their clothing apply rather to the past than the present—yet they are, no doubt, still too true.

From the Hon. Mr. Wyllie's "notes" I quote the following:—"In a valuable manuscript paper of Dr. Rooke's, to which I have had access, he adds *Puerperal Fever* as very common and very fatal. Excepting that disease, apoplexy, croup, and dropsy, the others are stated to be generally mild, yielding easily to proper care and medical treatment."

The *Therapeutic Constitution* of the Hawaiians is not, so far as I can learn, peculiar, save that their systems seem not as susceptible as ours to influences of a morbid or remedial character. Their life seems not of so high a grade as ours. Their nervous systems are not as fully developed, and are with greater difficulty impressed by external influences. It is this fact which, I think, accounts for their being able to exist, undermined as their constitution has been, and adhering to modes of living which would prove rapidly fatal to the same number of the most robust of the Anglo-Saxon race; for it will be remembered, that their lives of exposure are very different from those exposures connected with the incessant activity and vigilance incident to journeys and heroic exploits, which may ever be encountered with impunity.

This portion of my essay is meagre. It is with difficulty I have collected that which I give. How desirable that men of medical intelligence should investigate and report on this and the several other points of interest connected with the climate and diseases of Polynesia.

I will first notice such of the Materia Medica and remedial practices, originally employed by native Hawaiians, as I am informed of, and will then enumerate those other indigenous Materia Medica, not, so far as I am aware, included in the native Hawaiian Dispensary; and will thirdly notice such medicinal vegetables as have been introduced since the discovery of the Islands, enumerating both the unofficinal and officinal.

And *first*—To pass unnoticed the Materia Medica of a savage people, simply because employed by savages, is unreasonable and impolitic; for, have not all medicines been first employed empirically—has not our science been built up from empiricism—and have not the great body of our vegetable Materia Medica been first used by ignorant and even savage empirics? Might it not be possible, by a complete canvassing, to learn something even from Hawaiian empiricism?

The *Arum esculentum* is a plant very nearly allied to the *arum maculatum* and *arum tryphillium* in all its external habits and properties, and probably, like them, possesses a “property of stimulating the secretions, particularly those of the skin and lungs.” (U. S. Dispensatory.) It is the principal article of diet among the Hawaiians. The heat of the oven dispels its peculiar acrid principle and renders it a very nutritious and valuable article of diet, had in great esteem by foreigners, but especially by the natives. The acidity is probably reduced by cultivation, but a very considerable portion of it is still retained. Says Dr. Chapin:—“It is, when raw, very styptic and acrid, and the skin of the root is used by the natives in the cure of dysenteries and intestinal hæmorrhages.”

The *Cucurbita lagenaria*, or gourd, is used as a purgative. It is, in its medical properties, allied to several of the cucurbitacæ, particularly to the *cucumis colocynthis*. "The pulp of the root is used," says Dr. Chapin, "and in large doses it is terribly drastic. The inordinate doses given by the natives sometimes produce dysentery, rapidly fatal." Dr. Judd relates the case of a woman purged to death with this article by a native physician for an imagined disease. "About four feet of the green running vine of the bitter calabash, or gourd, thirty-two of the hollow stems which support the leaves, and about one ounce of the dry pulp, next the shell, of the dried gourd were pounded together on a board and the juice mixed with about three pints of water." "It is used by them successfully in dropsies. I once knew a native, with abdominal dropsy, cured by one of his own physicians with this article, after he had been treated unsuccessfully by foreign skill." (Dr. Chapin.)

A variety of *Ipomea* is mentioned by Dr. Chapin. "The roots are used by the natives as an emetico-cathartic. I tried it somewhat, and found it had efficacy; but the doses requisite were so large and the trouble of preparing it such, I abandoned it." I am utterly unable to give the specific title. It is questionable whether its medical powers have been fully ascertained.

The *Aleurites triloba*, or candle-nut, is one of the articles of the Hawaiian Dispensary. "The kernels of these are stuck, one over another, like beads, upon a fibre of cocoa-nut leaf, a foot long, and, containing a considerable proportion of inflammable oil, they give sufficient light for ordinary purposes, the flame communicating downward till the last piece is consumed. Sometimes five or six such strings, two yards in length, are wrapped together in a leaf of banana, and carried before the king, as flambeaux, when he travels by night." (Tyerman and Bennet's Journal.) Dr. Chapin remarks:—"I know it to be used as a cathartic; but never experimented with it myself." An oil extracted from this nut forms an article of export for painting—may it not have available medicinal properties?

The *Piper methysticum*, called "ava" by the Hawaiians, is one of the most important of their indigenous *Materia Medica*. From it they prepared a narcotic drink, esteemed throughout Polynesia. The bark of its stem is possessed of the peculiar properties of the plant, but it is the root which was principally used by them. "They prepared it for use by mastication. A person chews it thoroughly, and ejects it with the accumulated saliva into a dish, in which state it is drunk by the patient. Most of their medicines they prepare in the same manner." In continuation, Dr. Chapin says to the author:—"I supposed it might be serviceable as an anodyne: I gave it repeatedly in powder. It did not seem to possess narcotic properties, and after a number of trials with it I gave it up. The natives, as they said, used it to cure cutaneous diseases, by producing desquamation of the cuticle. They give it daily in such quantities as at length to accomplish the object. I think the article deserves further trial." Mr. Bingham informs me that "the juice is highly valued, and was much used both as a luxury and as a medicine, as alcohol still is in wiser countries. A singular effect of taking a course of ava was the cracking and coming off of the cuticle over the whole body of the patient, with which, it was maintained, the system parted with maladies." Mr. Jarvis says:—"Its effects were very pernicious, covering the body with a white scurf, * * * inflaming the eyes and causing premature decrepitude. It was also taken as a medicine, and was supposed to be an effectual remedy for corpulence." Mr. Ellis speaks of the "burning effect and unpleasant taste of the ava." A few years since, a gentleman, long a resident of the Islands, proposed exporting it to the United States, and there manufacturing of it some nostrum—which might, no doubt, have become as popular as Townsend's Sarsaparilla! Its medicinal properties are, perhaps, allied to those of the *Piper augustifolium*, or Matico, of which the U. S. Dispensatory says:—"Its most useful internal application is, probably, as an alterative stimulant to the diseased mucous membranes."

The Dispensatory refers to an article by Mr. Morson, on the *Ava*, in *The Pharm. Journal and Transactions*, Vol. 3, p. 472, which I have not been able to obtain.

The Vapor of Hot Water was, it seems, employed by the Hawaiians, and though a practice not peculiarly their own, the mode of administration, as related by Dr. Chapin, may amuse and instruct. "Prolapsus uteri they relieved by steaming over heated stringent herbs. Febrile diseases, rheumatisms, and many others, were treated by steaming. The patient was wrapped in green leaves, freshly picked, and laid on a bed of heated stones. If he writhed under the intensity of the heat he was held still by attendants. If he died, the doctor and all ran away!" How striking the similitude between the Hawaiian and the American quack, both in the mode of practice and in manner of escape!

But their characteristic mode of alleviating pain is the *Lomilomi*—a systematic kneading, and pressing, and squeezing, and rubbing, employed in all cases of fatigue or pain, where not intolerable. To appreciate fully the virtues of the practice, one must himself be operated on by a practical Hawaiian. It is, in many cases, most admirable. "People were especially trained to lomilomi; a kind of luxurious kneading or shampooing, and stretching, and cracking the joints, which seemed completely to renovate the system, when suffering either from a surfeit or fatigue. The fatter the chiefs, the more they required the operation." "The most delightful of the traveler's comforts is the lomilomi. It is something between a squeeze and a pinch, which none but a native knows how to perform; commencing gently, and increasing in violence as they proceed, every limb in the body is subjected to this treatment. It is, as a friend terms it, a physical regeneration. (Jarvis.)

A few articles of our *Materia Medica*, though not employed by the Hawaiian practitioner, are found indigenous upon the Islands, and should be mentioned. The number might, no doubt, be extended.

Lime (calx) is readily prepared by the calcination of coral.

Nitre (potassæ nitras), of which J. G. Sawkins remarks, it "is not found pure, so far as I can learn, on this group." (*Agricultural Report*, Vol. 1, No. 2.)

Sulphur, from about the crater of Kilanea.

Common Salt (sodii chloridum) is manufactured in considerable quantities from the ocean, and is also collected from the salt lake of *Alia-packai*. During the year ending June 30th, 1851, 5,332½ barrels of salt were exported. Mr. Sawkins remarks of the Island salt, that it is "rarely pure, on account of the sulphurous gases of the neighboring active volcanoes."

Glauber's Salt (sodæ sulphat.) is found at Kilanea, and has been occasionally used.

Sponges (spongia officinalis). They are, however, a very coarse, inferior article.

The Sorrel (rumex acetosa).

Arrow-root (tacca oceanica). From July 1st, 1850, to June 30th, 1851, inclusive, 16,780 pounds of prepared Arrow-root were exported. I extract the following from The United States Dispensatory:—"A variety of Arrow-root has been imported from the Sandwich Islands. It was supposed to be procured from the root of *Tacca pinnatifida*, which grows abundantly in Tahiti and other islands of the South Pacific; but Mr. Nuttall, during his visit to the Sandwich Islands, found that it was the product of another species of Tacco, which he describes under the name of *Tacca oceanica*. (*Am. Journal of Pharmacy*, ix., 305.) It is said that a similar product is obtained from *Tacca pinnatifida*, growing in the East India province of Arracan."

The Sugar Cane (saccharum) is by far the most important of the indigenous Materia Medica, in a commercial aspect. The manufactured *Sugar* which was exported, amounted in 1849 to 653,820 pounds, and in 1850 to 750,238 pounds. The exported *Molasses* (sacchari fæx) amounted in 1849 to 41,235 gallons, and in 1850 to 53,855 gallons.

A large number of the "Flora Medica" have been introduced since the discovery of the group. Quite a number of

them are thoroughly naturalized; and some are already of great importance among the exports, though in every such instance the article is not only a medicine, but also a food. Without question, the Sandwich Islands will yet produce for export many of the *Materia Medica* proper. From the paucity of my facts, I can do little more than give a mere list of these introductions, and even this will be defective.

I will first mention the *unofficial* articles.

Coffee (*coffea arabica*). This was first permanently introduced by Lord Byron in 1828. In 1849, 28,231 pounds of coffee were exported, and in 1850, 208,428 pounds. (Cheever's *Sandwich Islands*.) It is of an excellent quality.

Indigo (*indigofera*). In many parts of the Islands it now grows wild. From experiments made by the writer many years since, the Sandwich Islands indigo may be pronounced a good variety—probably quite as good, in its medicinal and economical and manufacturing properties, as any in the markets of the world.

The Touch-me-Not (*impatiens noli-me-tangere*) grows luxuriantly.

Onions (*capa*). They are greatly relished by the natives as a condiment, and are raised by them in considerable quantities. During the year ending June 30, 1851, 3,759 barrels were exported.

The Irish Potatoe (*solanum tuberosum*). Of these there were exported, in 1849, 858 barrels, and in 1850, 51,957 barrels.

Indian Corn, or *Maize* (*zea mays*) grows well; is not extensively raised. During the year ending June 30, 1851, five barrels were exported.

Indian Rubber, or *Caoutchouc* (*syphonia cahuchu*, or *S. elastica*). A very useful tree, which it is to be hoped will be rapidly multiplied on the Islands.

Rice (*oriza sativa*). As yet it is only raised experimentally, but it may become an important production.

The Pumpkin (*cucurbita pepo*). *The Muskmelon* (*cucumis melo*). *The Cucumber* (*cucumis sativus*).

Of *officinal* plants, the following imperfect list will serve our purpose of exhibiting the admirable adaptation of the soil and climate to the production of many choice articles, and of indicating how independent of other countries, as to their *Materia Medica*, these Islands may become.

The Castor Oil (*ricinus communis*). This may be said to be effectually naturalized. In many places it grows, becoming a perennial. As yet no considerable use is made of it. There may, however, come a time when Castor Oil shall be manufactured there, not only for home consumption, but for export from the Islands—a rival even to “the cold-drawn East India oil.”

Mustard (*sinapis*) grows wild over considerable tracts. I am not aware that it is at all used, even as a condiment, though, no doubt, possessing requisite strength. Mustard is even imported for the tables of foreign residents.

The Pomegranate (*punica granatum*) has been brought to maturity on the Sandwich Islands, and is, no doubt, still cultivated by those of horticultural tastes. The rinds of the fruit (*malecorium*), and the flowers (*balaustines*), may yet be valued among the rural inhabitants for their astringent and tonic properties; though, if it be true, as before stated, that verminous affections are rare, the famed properties of the bark of the root may not be called into requisition.

The Stramonium (*datura stramonium*), introduced many years since, now propagates itself, and was, about Honolulu, the nuisance of my boyish days. This powerful narcotic, so identical in its effects with belladonna, though by no means to be employed as a popular remedy, may yet be made valuable to the Island practitioner.

Several members of the genus *Citrus*—*The Orange* (*c. aurantium*), *The Citron* (*c. medica*), *The Lemon* (*c. limonium*), *The Lime* (*c. acris*)—which are, I believe, all introduced, form an important group. The orange was first planted on the Islands by Capt. Vancouver, in 1792. As a fruit, they have already become quite an article of export. In 1849, 10,000 were exported, and in 1850, 139,500. I know not

why the Sandwich Islands may not produce the much sought orange flower water (*aurantii floris aqua*), used both in the toilet chamber and the apothecary's shop; and if the flowers of the Seville or bitter orange (*citrus vulgaris*) be preferable, it can, no doubt, be added to the Island Flora. The oil, or neroli (*aurantii oleum*) will, no doubt, possess as fine a scent as that of France or Italy. Three hundred and four gallons of lime juice (*limonus succus*) were exported in the year ending June 30th, 1851.

Cotton (*gossypium*). This article, so useful in burns, grows well, and is of good quality. It has not become an article of export.

Wheat (*triticum*).

Oats (*avena sativum*). These two grains, officinal in the Pharmacopœia, and of such noted importance in other departments of civilized life, are every year becoming more important articles of culture for home consumption.

Coriander (*coriandrum sativum*). *Fennel* (*feniculum vulgare*). *Anise* (*pimpinella anisum*). *Horseradish* (*cochlearia amoracia*). *Cayenne Pepper* (*capsicum*). *Black Pepper* (*piper nigrum*). *Rhubarb* (*rheum*). *Lettuce* (*lactuca sativa*). *Sage* (*salvia*). *Carrots* (*daucus carota*). *The Broom* (*cystisus scoparius*). *Ginger* (*zingiber*). *Hops* (*humulus lupulus*). *Roses* (*rosa galica*). *Poppy* (*papaver somnifera*).

Aloes (*aloe*). I think I am correct in mentioning this, though as yet it is only cultivated for ornament.

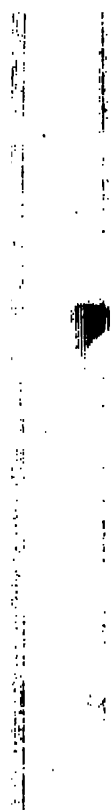
The Tamarind (*tamarindus Indica*) has long been introduced, and is a very valuable tree for the tropic zone.

Tobacco (*nicotiana tabaccum*) has been long cultivated on the Islands, and promises to become a very important export.

Figs (*ficus carica*) are being more and more cultivated, and may become an important export.

The Grape (*vitus virifera*) grows well in some localities, and it is now a subject of active discussion and experiment, whether it may not be extensively cultivated. Should the anticipations of some be realized, the Hawaiian Islands are to become as noted for their wines as Portugal or Madeira.

Thus, to repeat Edmund Burke's witticism, the Sandwich Islands producers are aspiring to the rights of kings, viz. : to the "*jus de vinum*." While the *Grapes* are cultivated for luxurious contributions to the table, and while the *Raisins* are dried for the home and foreign markets of future days, as medical men, we may "hope against hope," that *Hawaiian Wines*, with all their variety and excellence, shall be manufactured for the *Materia Medica* rather than for the *Materia Alimentaria*.



FURTHER OBSERVATIONS

ON

TRISMUS NASCENTIUM,

WITH

CASES

ILLUSTRATING ITS ETIOLOGY AND TREATMENT.

BY

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OF MONTGOMERY, ALABAMA.

[Extracted from the American Journal of the Med. Sci. for July, 1848.]

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1848.



OBSERVATIONS

ON

TRISMUS NASCENTIUM.

SINCE the publication of my first paper on this subject, (*Amer. Journ. Med. Sci.*, April, 1846,) new facts and observations have developed new truths, and detected the errors into which I had fallen. They will show that some of my first positions are untenable. For instance, I said that a *deficient ossification* of the cranial bones was essential to the production of the disease. This I must recall; for, as a general rule, the very reverse is the fact. The *deficient ossification* alluded to, was not intended to be understood as a *pathological* condition, but simply the *physiological* state so necessary to a safe and easy parturition.

Another point on which I was in error, is the "dorsal decubitus." I find that children may have trismus, and at the same time, be kept on a feather bed, and that, too, when they are laid upon (what mothers usually call) *the side*.

The next error that I have to correct is in regard to "spinal hemorrhage." The sequel will show that, under certain circumstances, a child may die of trismus in its most aggravated form, and yet have no extravasation within the spine.

But while these positions are admitted to be erroneous, there are others which are fully sustained by every fact that has fallen under my observation, viz:—That trismus nascentium is a disease of centric origin, depending upon a mechanical pressure exerted on the medulla oblongata, and its nerves; that this pressure is the result, most generally, of an inward displacement of the occipital bone, often very perceptible, but sometimes so *slight* as to be detected with difficulty; that this displaced condition of the occiput is one of the fixed physiological laws of the parturient state; that when it persists for any length of time after birth, it becomes a pathological condition, capable of producing all the symptoms characterizing trismus nascentium, which are instantly relieved, simply by rectifying this abnormal displacement, and thereby removing the pressure from the base of the brain.

These are simple truths, mere corollaries, plainly deducible from facts which I shall now proceed to relate, throwing in occasionally some practical remarks, naturally suggested by individual cases, as proper to the elucidation of the subject generally.

CASE I.—Dr. Hogan, writing to the editors of the *New Orleans Med. and Surg. Journ.*, July, 1846, p. 136, says, "I have met with a case of trismus nascentium at the sixth day, since Dr. Sims' paper was published in the *Amer. Journ. Med. Sci.* I found the child upon its back, 'with the occiput shoved in,' spasms occurring upon the slightest noise or touch. It was in articulo mortis. I left it dying. I called too late in the afternoon to make a post-mortem examination."

CASE II.—For this case I am indebted to Mr. J. C. Duncan, of Illinois. I copy it from his letter bearing date "Bloomington, August 9th, 1846."

"Four days since I received your pamphlet on trismus nascentium. The description of the disease immediately reminded me that the child of a near neighbour had been suffering under precisely the same symptoms for two days past, and was then supposed to be dying. The attending physician had declared it to be inflammation of the brain, and that death must ensue. The child was fourteen days old. Mrs. D., after hearing a brief narration of the contents of your paper, hurried away to the sick room to examine the child's head. The child had lain *on its back all its life*. She raised it up and found that *the back of the head had all sunk in*. * * * * * The spasms had been more frequent for the last twelve hours—the mouth was closed tightly, and swallowing impossible—a change of position (on a nice soft pillow) was adopted. In four hours from this change, which was repeated from one side to the other every half hour, the head had regained, in a great measure, its shape—that night the child was able, although with difficulty, to take some sustenance—by morning the spasms had almost entirely ceased, and in eighteen hours the babe was at the mother's breast. It is now perfectly well."

Mr. Duncan is not a medical man, but the facts of this case are not the less forcible.

CASE III.—Mr. Jas. S. Winters' child (male) was born on Saturday, 21st March, 1846, at 4 A. M. It was a fine hearty looking child, but seemed to be quite unwell—*refused the breast from the first*—was not able to open the jaws so as to take the nipple; was restless, sleepless and fretful all the time, making a distressing moaning, with occasionally "a peculiar sort of unpleasant breathing." What little nourishment it was forced to take seemed to sicken it. The grandmother, feeling great uneasiness about the child, held it on her lap most of the day and nearly all night. Its moanings and restlessness, which she attributed to the colic, caused her to give it repeated doses of paragoric and catnip tea, but with no benefit. It appeared to be in a great deal of pain, and throughout Sunday she noticed that it had occasionally a little *spasmodic quivering* or jerking of the *right* arm and leg, but not of the *left*. The movements or spasms of the arm and leg were, as well as she could determine, synchronous.

On Sunday evening, I saw the child. It was then thirty-six hours old. Had for several hours refused to swallow anything. The grandmother had it lying across her lap on its back, with the occiput lying on her left knee. After hearing a description of the symptoms, as above related, I examined the occiput, and found the *right* edge of it pushed under the corresponding part of the parietal bone, while the *left* was riding over its parietal neighbour. [I wish this fact to be remembered, for, in connection with others to be related, it assists very materially in pointing out the rationale of the diseased action.] The grandmother remembered that the child had never

been laid on its side. Of course, I lost no time in placing it *properly* on its side on a pillow. In two hours it was perfectly free from all pain, distress, moaning and jerking, and it rested finely all night. On the next morning (Monday), it was able to suck freely for the first time, and the right edge of the occiput, like that of the left, was occupying its proper relative position, *exterior* to the parietal.

This child was born *trismal*. Its restlessness, sleeplessness, moanings, stridulous breathing, spasmodic choreal, jerkings of the arm and leg, its locked jaws and *inability to suck* (although there was no tonic rigidity), all go to establish it as a case of trismus: and there was an *inward* displacement of a portion of the occiput. Now all these symptoms were instantly arrested simply by rectifying the occipital displacement, and, that, too, without giving one drop of medicine.

CASE IV.—Wyatt Peters' child, female, born on Monday, 23d of March, 1846. Nothing unusual in the labour, which was the second. From the very hour of its birth, it seemed to be affected with *cold*, as manifested by a "hoarseness," "wheezing," or "rattling in the throat," which has always been worse during sleep, and worse at night than in the day. The mother says that over and over again they have made it suck a "piece of *fat raw bacon* to clear the *phlegm* out of its throat," but to no purpose. With this exception, the child did pretty well for the first nine or ten days, when the mother was waked up about one o'clock in the morning, by its hard breathing, and then for the first time it *refused to suck*, or, rather, it *could not open its mouth* wide enough to take the nipple. Every attempt at nursing would excite a spasmodic closure of the lips, thus preventing the introduction of the nipple. There was also great restlessness, with moaning and slight spasms, but no tonic rigidity. These paroxysms would come on every night near about the same hour, with more or less violence, and last usually three or four hours. I saw the child on the nineteenth day, for the first time. Its crying, which was attended with a spasmodic, croupy sort of cough, had always been peculiarly weak, hoarse and stifled. It had occasionally a sudden involuntary jerking of the hands towards the head (as if it were *frightened*), accompanied with a *tight puckering* of the mouth. Jaws could not be opened. It *could not suck* at all. [This inability to suck is pathognomonic of the disease.] The mother made many fruitless efforts to force the nipple into the child's mouth, exciting invariably a spasmodic closure of the lips. A little tea seemed to strangle it; indeed, it *could not swallow*, but with the greatest difficulty. Its breathing was hurried, stridulous. [What the mother called "stuffed or choked up with cold," "wheezing," "rattling in the throat," "hoarseness," I find to be a stridulous inspiration. Until I saw this case, I was not aware of what was to be understood by the graphic language used by mothers to designate this symptom; for instance, in my former paper on this subject, I quote the words of one mother where she says that her child "made a little wheezing noise like a kitten." Another, "like it was choking to death;" and a third, where it made a noise "more like something a dying," all evidently meaning what we understand by the term laryngismus.]

When I entered the room, the mother was holding the child in her arms. It was *lying on its back*, the occiput resting exactly on her left arm. On inquiry, I found that it slept on a pile of pillows in a rocking chair during the day, and in the bed with the mother at night. Without asking any more questions, I was determined to see in what position the child was

kept, so I requested the mother to place it in the chair, as she was in the habit of doing during the day. She did so, and *laid it on its back*. I now directed her to take it up and put it to bed, just as she would do if she were going to rest for the night. She did so, and placed it *exactly on its back again*. She had always kept the child lying on its back, was afraid to turn it on the side, "for fear it might turn clear over on its face, and get smothered."

The edges of the occiput were overlapped by those of the parietal bones, not to so great a degree as I have seen, but to a very remarkable extent: so much so that the parents could easily perceive it when it was pointed out and explained. I had the child placed *properly* on its side on a pillow, not giving any medicine. In twenty minutes (by the watch), the stridulous inspiration was gone; and in thirty minutes, there was no moaning or other signs of uneasiness. I left the little patient at 10 o'clock, feeling pretty well satisfied that it would recover without any more trouble; but about midnight, (as usual,) it screamed out suddenly some three or four times in rapid succession, throwing the hands up, and clinching them so tightly, that they could not be opened; at the same time that the head was jerked back, eyes rolled in every direction, the lids being kept widely open, jaw "fallen," feet and legs stretched out, body thrown backwards, and all attended with a sort of *quivering* motion thrilling the whole frame. These spells of clonic spasm (thus described almost in the mother's own language), would come on every two or three minutes, the paroxysms getting shorter, and the intervals longer, till they gradually disappeared about 3 o'clock in the morning. During this period, the mother felt so uneasy about the child, that she took it up two or three times on its pillow, but finding every time she touched or moved it, that the "spells" got worse, and would come on oftener, she was constrained to let it lie still. About 4 o'clock, it sucked a little, but very feebly, and fell asleep. At 6 o'clock, it waked up, and sucked very well, indeed, better than it had ever done before. From this time on, it was regularly convalescent, although the occiput did not gain its proper position *exterior* to the parietal bones for about 36 hours, during which time the child was kept carefully on one side or the other. After this, it was laid upon the back without disturbing the relative position of these bones, and without reproducing the slightest symptom of the disease.

CASE V.—This is one of the most remarkable cases that I have ever known. On Thursday, 2d of April, 1846, my friend Dr. Vickers was sent for to see a negro child at Robert T. Ashurst's, which had been sick more or less all its life. It was then *between four and five months old*. The doctor related the case to me, and I transcribed it nearly in his own words. I shall use the notes made at the time. He says: "It was a pale, puny, sickly looking, emaciated child; had frequent, involuntary, greenish mucous, griping passages. It was lying on its back in a deep, narrow cradle. Had a constant rotary movement of the head on the pillow as it lay on its back, exactly like what we see in hydrocephalic cases. It seemed to be clawing at its mouth with the *right* hand; yet the hand was directed to no particular spot. By watching it awhile, I soon discovered that the motions of the right hand were involuntary, that it moved in a regular gyration from the mouth across the breast, down by the side, being now thrown outwards and brought round again towards the mouth, and so on; each gyration occupying a definite, almost unvarying period of time. In addition to

this movement of the *right hand*, I observed a similar one of the *right leg*, which was altogether synchronous with that of the upper extremity. This consentaneous action in the right side naturally led me to notice the left, and I immediately saw that it was passive, indeed, perfectly paralyzed. I raised up the *left hand*; let it go, and it fell lifeless by the side. I now raised up the *left leg*, and let it go. It, too, fell, like a stick, powerless and motionless, and obeying most perfectly the laws of gravitation. Its eyelids were half open, eyes glazed and turned up, pulse almost imperceptible, stringy; one pulsation running so closely into another, as to make it impossible to count them. Its breathing was panting, and very frequent. I really thought the child moribund.

"It was lying on its back on a cradle, which was too short to allow it to lie its full length, and so narrow and deep, as to preclude the possibility of its turning on its side, even if it had had the physical power to do so. Its bedding was composed of blankets, and it had an old pillow of chicken feathers under its head. The back of the head, and for half an inch around the lambdoidal edges of the parietal bones, was as clear of hair 'as the palm of my hand,' so smoothly had it been worn off by the constant rotary motion of the head. *The occipital bone was shoved in* on the brain to an almost incredible extent. It was pushed so far under the level of the edges of the parietal bones, as to have the appearance of a segment of a sphere sawed off and placed on the inside.

"I immediately determined to see whether all this train of symptoms (though I feared it was too late), was not the result, solely, of *the dorsal decubitus, and occipital displacement*; so I took the child up and placed it on its side in a bed, without giving it any medicine at all. In one hour, the spasmodic action of the *right arm and leg* began to subside; and just in proportion as the *chorea of the right side* was relieved, so was the *paralysis of the left*. In two hours its pulse was full, strong, easily counted, and only 120 per minute. Its breathing was entirely relieved. After keeping the child about four hours on alternate sides, (seeing that it was now out of all danger,) I thought I would try the experiment of placing it again on its back in its *little pillory*, the cradle; and, in less than five minutes, all the symptoms were reproduced, *the chorea, paralysis, &c.* Turning it upon the side soon put a stop to them. This experiment was repeated frequently with the same results.

"It now occurred to me to try some experiments, with the view of observing the symptoms of (properly speaking) a *trismus* character. The mother said, that there had always been great difficulty in getting the child to suck; that sometimes it could not draw the breast at all; and very often would stop before it got half through; and that this had been the case from the time it was a week old. I requested her to suckle it; (it was now quiet; had been for some time lying on its side.) She took it up from the bed, and applied it to the right breast. In doing this, the occiput fell precisely against her arm, as it supported the head; there was a difficulty in the child's laying hold of the nipple, and she attempted to force it into the mouth by pressing this firmly up against the breast. This plainly increased the difficulty, for the pressure of the child up to the breast, by the arm supporting its head, and acting upon the occiput behind, evidently produced a deeper displacement of this bone, and so every effort on the part of the mother, while she thus held the child, only aggravated the trouble. Seeing that there was no chance for it to suck in this way, I requested the mother to take her arm from under its head, while I would support it in

my hands. I now held its head between my hands, gently and firmly compressing the parietal protuberances for five or six minutes, but with no pressure on the occiput; and it sucked with the greatest ease; indeed, most ravenously. I then changed the pressure from the parietal to the occipital bone, and instantly the same difficulties occurred, as when the head was resting on the mother's arm; and thus I occupied myself for nearly half an hour in alternately producing and relieving the symptoms of *lock jaw*; in the first instance by *displacing* the occiput, and in the next, by *replacing* it.

"I did not intend giving the child any medicine, but Mrs. A. insisted on its having 'a good big dose of calomel.' Knowing that she would not be satisfied if I did not prescribe something more than mere change of position for so grave a case, I poured out a few grains of prepared chalk, and requested her to give *the calomel* at night, and to be particular to keep it on one side or the other, all the time. The child had taken any quantity of chalk mixtures before, without producing the slightest good result: so I concluded that I might venture on this as a placebo, without any danger of dividing the honors with change of position.

"Next day, I visited my little patient, and Mrs. A. met me at the door, in perfect ecstasies with the results of the *quasi* dose of calomel—said she had never seen calomel exert such miraculous effects in so short a space of time; that the child had had two good bilious evacuations for the first time in its life; that it sucked well, (I had directed the mother how to nurse it without pressing in the occiput,) and looked better than any one could have hoped. Its passages (as before remarked) had *always* been greenish mucus without fœtor, but I now found them natural in appearance, and *fœtid* enough. In three days, I discharged the case as cured, not having given any physic save the few grains of prepared chalk."

I visited Dr. Vickers' patient with him, on the 13th April, eleven days after he first saw it. I found the child quite lively, and fattening very fast. It had a *pale, ashy* look; indeed, it was as pale as a mulatto, but is evidently free from any taint of that sort, for its parents are quite black. The occipital region was perfectly clear of hair. The occiput was not pushed under, as at first, but still its edges were within those of the parietal bones. It was movable by pressure. While examining this bone, it occurred to me to try the experiment of pushing it in on the brain: so I placed my two thumbs on the *pars occipitalis*, grasping the lateral and anterior parts of the skull with the hands, and thus, by the use of considerable force, I displaced it suddenly. What was my surprise to see, in an instant, the immediate reproduction of the involuntary gyrations of the *right* arm and leg, with a motionless state of the opposite side. This experiment was often repeated, with precisely the same results. Each time, as the pressure was removed, the symptoms ceased, the bone resuming its position with the cessation of the pressure. By these experiments, I also had the satisfaction of fully verifying Dr. Vickers' observations on the *trismal* symptoms in connection with the displaced occiput.

On inquiry, the mother informed me that the child had never been well since it was born; that it never had a natural or healthy-looking passage from the bowels, till Dr. Vickers was called to see it; that it did tolerably well till it was about a week old, when it became fretful, refused to suck, made "a curious noise in its throat" (stridulous inspiration); that sometimes it would suck pretty well, and then, again, it could not; that it had a perpetual bowel complaint, and for the last two or three months, had passed thousands of little, fine thready-looking worms.

It may be thought that I am occupying too much time with a single case, but it is so important in its bearings on the etiology of the disease, that I must be pardoned for adding a few words more.

It might be said, "If the occiput was so much displaced, and the child lived *five* months, how is it that they die very suddenly, and that often, when the occiput is so slightly displaced as to be scarcely discoverable?" Let us examine the facts of the case for an explanation. The child was kept all the time in a cradle, without a nurse. The cradle was too short to allow it to lie flat down, so it was kept in a semi-erect position, with its head supported by a large (not very soft) old pillow of chicken-feathers, all *matted* together—the cradle was too deep and narrow to allow it to turn on its side, even if it had been strong enough to do so—the unvarying "dorsal decubitus" kept the occiput displaced; the semi-erect position threw the weight of the head on that point of the occiput between the occipital protuberance and the posterior fontanelle; this necessarily tilted the mesocephalon forwards against the cuneiform process of the occipital bone, and pressure exerted on the pons* always produces chorea or paralysis, or both, in exact proportion to the amount and degree of pressure. The semi-erect position was altogether favourable to the prolongation of the disease (and of life), because, in a perfectly supine position, the weight of the head would have rested lower down on the occiput, which would have displaced the bone, so as to press more on the medulla oblongata and the eighth pair of nerves, and thus the patient would, in all probability, have died, at a very early period, of asphyxia. Moreover, the semi-erect position favoured the return of the blood from the spinal veins into the general circulation, through their anastomoses with the cervical, azygos, dorsal, lumbar and sacral, thereby preventing the congestion and, perhaps, extravasation, which may result from the purely supine position.

I will admit that the case above related has not a parallel, so far as I know, but it must not be supposed that chronic cases of trismus are uncommon. Most of our writers on the subject describe the two varieties of acute and chronic; thus Coley says (page 393)—"The chronic variety commences with dysentery, and is attended with a cold exsanguious state of the skin, whence it has been popularly denominated the 'white locked-jaw.' This form of the disease is tedious, and attended, as when dysentery is uncomplicated, with rapid emaciation, which renders ordinary treatment insufficient, and terminates in death."

CASE VI.—This case furnishes another example of the disease in a chronic form, and is related to me by Dr. G. A. Tompkins, of Pike Co., Ala., who writes thus:—

"Some time ago, when casually passing a house in this neighbourhood, I was stopped, and asked my opinion in regard to the disease of a white child, as it was thought to be an uncommon case. My attention was called to an extensive phlegmonous erysipelatous inflammation of one arm, and the opposite thigh. On examining the child more closely, I discovered the muscles of the extremities to be rigid, and that there was considerable opisthotonos, which circumstances, together with the unavoidable position on the back, induced me (from having a short time previously heard of your views of trismus nascentium), to make an examination of the occiput, which

* See an interesting paper on the "Source of Convulsions," by T. Wilkinson King, Esq. Med. Times, Oct. 1844.

I discovered to be *very much depressed, and considerably overlapped by the parietal bones*. I was not called in to take charge of the case, but I directed them to lay it on its side, if possible. I afterwards learned that they tried to do so, but the tenderness of the hip prevented it from lying on one side, and that of the shoulder from the other; so it was allowed to continue on its back. It died five days afterwards. On making inquiries since, I learn that it was *unable to suck* when I saw it, that its dejections were of a *dark-green dysenteric* character, and, likewise, that it occasionally had *spasms*. It differed from the cases of trismus reported in your paper, (which I have since seen,) in the age of the patient, as this child was about *five months old*, though it was badly-grown, and very much emaciated.

"November 13th, 1846."

The six cases now related are all of one character—all plain and simple—all had the occiput *shoved in* to such an extent that it was easily detected by a very superficial examination, and all had been kept upon the back, and *flatly so*.

I now pass on to a class of cases, where it is not so easy to detect the occipital displacement, and where, of course, there will be less of the "dorsal decubitus;" but in which the true relative position of the bones may be readily detected, when the method of doing so is once understood.

This is the class of cases which formed the basis of two excellent papers on this subject, by my friends, Dr. Baldwin,* of Montgomery, and Dr. Gailard,† of Charleston. Each advocates the old notion of the traumatic umbilical origin of the disease; one contending that the "spinal hemorrhage" is a sequence of the spasms; the other, that "it is not necessary to the disease." With the first, I shall agree that a child dying of trismus, really dies *asphyxiated*; and with the latter, that "the effusion of blood into the spinal canal," is not an essential and unvarying feature of the disease.—Their theoretical views I shall not touch; but I may be pardoned for examining a little into the facts adduced. Dr. Baldwin kindly invited me to see his case, both during its progress, and at the autopsy, and as it forms the basis of some practical remarks on the disease, I shall take the liberty of borrowing it from his published account.

CASE VII.—Dr. Baldwin says (*loc. cit.*, p. 363)—"At midnight, the child became very fretful, and refused to nurse, and occasionally was noticed to 'jerk,' as if it had spasms, and continued in this situation through the night. Has passed the meconium, and its last operation was yellow.

"11 o'clock A. M. The mother is lying on a *soft feather bed*, and in every way comfortably situated. When questioned relative to what position she had kept the child in since its birth, she stated that it was *her habit* to lie on her *side*, and that she kept the child *on its side, facing her*, changing its position as she changed her own from side to side, but never on its back. * * * * *

"Among other prescriptions left for the child, I directed that it should not be allowed to lie on its back, and that its position should be changed often, from side to side, on a soft pillow. As regards the position of the bones of the head, they seemed to me to be about as regular and well-formed as in infants generally of its age. Dr. Sims thinks the lateral edges of the

* Amer. Journ. Med. Sci., Oct. 1846, p. 353.

† South. Journ. Med. and Pharm., Sept. 1846.

occipital bone are 'slightly' overlapped by the parietal. * * * * Dr. Boling, after carefully examining the bones of the head, remarked, that if their position was remarkable for anything, it was for their very great regularity and uniformity."

As I said at the commencement of this paper, I have found out that a child may have the occiput "slightly" displaced, without ever having been kept square upon its back, or even on a hard substance. And that this *slight* displacement is all sufficient to produce the disease in its most aggravated form. When my first paper was published, I was not aware of this fact, and it was fortunate for the discovery, that the first cases that occurred to me, had the occiput so plainly, and so much displaced, that it was almost impossible for the mind to view the disease in any other light than as arising from the pressure exerted by the displaced occiput; and particularly, where the disease existed in all its force, and where all the symptoms were relieved, just in proportion as that displacement was rectified.

Once thoroughly imbued with this idea, it was a very easy matter to detect "slight" variations, or degrees, of occipital displacement; and it was certainly not difficult to infer that a "slight" occipital displacement was sufficient to produce the disease; particularly, when I found that every symptom yielded to its correction.

No one would ever have supposed, *à priori*, that so "slight" a displacement as that noticed in Dr. Baldwin's case, could have produced the disease; and if I had not since seen several similar cases remedied, I should not have felt warranted in claiming it as one arising from "occipital displacement."

Dr. Baldwin does me ample justice in saying that "Dr. Sims thinks the lateral edges of the occipital bone are 'slightly' overlapped by the parietal." He quotes me literally, and reports it honestly.

As there was a difference of opinion between us in regard to the relative position of the occipital and parietal bones, and as other writers have reported cases in which "the occiput was not shoved under," I feel warranted in devoting a few words to the proper method of determining this point.

In every case of labour, the occiput of the fœtus is displaced inwards, with its lateral edges under the parietal bones. There is hardly an exception to this rule. Moreau first observed it, and any man can easily satisfy himself of the fact.

In two instances, I have seen the edge of the occiput along one arm of the lambdoidal suture, underneath the parietal, while the opposite one was above it. This is the only variation of the general rule that has fallen under my observation. That the occiput is displaced then, in *every instance*, at birth, is a *truism*, and needs no illustration; but that it may remain so for any length of time afterwards, requires some proof.

Now, suppose I am called to a child, one, two, or even three or four weeks old, with symptoms of trismus. We will suppose, too, that it is a fine large child, hearty and plump in appearance, with the bones of the head well ossified. The mother says that she "always lays her babies on their sides." I wish to find out whether there is any occipital displacement. I run my hand around its head, applying the palm to the occiput, (as nine out of ten would do,) and feel no displacement. This is the character of one half the cases that occur, and this is the way in which they are investigated. But now let me go to work to find out exactly the relative position of the bones. And here, let me say, that one of two things must *invariably* exist: *either the occiput will be under the parietal, or the parietal*

will be under the occipital, according to the position in which the child has generally been retained. There is no such thing as the edges of these bones being in apposition or parallel with the commissures on the stretch. I have examined the heads of several hundred infants, since my mind has been turned to the investigation of this subject, and I have seen but very few during the first week, and none after the second, in which the edges of these bones were parallel, and the commissure on the stretch. This occurs only where the ossification is very deficient, is easily detected, and of course forms an exception to the general rule. Whoever, then, reports a case of trismus, saying that there was "little or no displacement of the occiput," or that "it was not more so than usual with children of that age," draws the conclusion from a superficial and careless examination, and the report of the principal fact is too indefinite to be of any value. He must examine it critically, and say *positively*, either that the edges of the occiput were *under* the parietal bones, or *exterior* to them. And now for the method of finding this out. If it is not ascertained almost by the sight alone; or if it is not immediately discovered by the usual careless way of running the broad surface of the hand around the head, (and this will not be done unless in cases where the child has been confined to an almost unvarying dorsal decubitus,) then I go to work in this way.—I press the forefinger pretty firmly against the occiput, about half an inch from the lambdoidal suture, and at a point about half way between the posterior fontanelle and the mastoid process—I now pass the finger slowly and cautiously *across* the suture; at every step making firm pressure. When the finger arrives at the suture, or, more properly speaking, the commissure, if the occiput is under the parietal bone, it will be found to yield, and the finger coming in contact with the edge of the parietal, will have to be elevated a little so as to pass over on to its free border: but if the occiput is on the outside of the parietal, then the finger meets with no obstruction; on the contrary, it glides smoothly over, and falls on to the parietal. The proof of this will be found in a retrograde manœuvre. Now place the finger in like manner on the other side of the lambdoidal suture, and pass it, as before directed, *across* the suture. If the occiput should be on the *inside* of the parietal, then will the finger pass over unobstructed, merely having to drop a little to come in contact with the occiput; but if it should be on the *outside*, then will the finger encounter its salient edge, and have to be elevated a little to get over it. By following this simple plan, there is no chance of making a mistake, or of even speaking indecisively on the subject. I wish to be fully understood in this matter, for upon the nice discrimination of "slight" displacements of this bone, will depend the lives of generations yet unborn.

Now, this is the plan I pursued in the investigation of the case above referred to, and it was the only method by which the true relative position of the bones could possibly have been detected.

But it may be said, "What if the bone was a little under the parietal, so little that two out of three could not detect it? Is it possible that it is sufficient to produce trismus?" I answer emphatically, yes!

During parturition, the proper place for the occiput is *underneath* the parietal; but in extra-uterine life, its proper and only safe position will be found to be in the *outside* of this bone. Usually the occiput gets right, *i. e.* *exterior* to the parietal (when a proper position is observed), in from twelve to forty-eight hours or more; generally it takes about thirty-six hours. Once get the occiput right, get it *outside* of the parietal, and it *never* goes back.

You may then lay a child on its back with the most perfect impunity; indeed, I should as soon think of breaking in a stone arch with a blow from a reed, as to displace the occiput under these circumstances by merely a dorsal decubitus.

But as these precepts are better enforced by practical illustrations, I shall proceed with my cases.

CASE VIII.—Mrs. Gregory's child, female, born on the 7th September, 1846. I was called to see it on 1st Oct. at 8 P. M. It was then a few days over three weeks old.—Here I copy from my notes made during the visit.—The child has been perfectly hearty ever since its birth up to yesterday, when it seemed to be "stretchy and gaping," was restless, fretful, and made a distressing moaning noise; slept some last night, but not much; was constantly "twisting and screwing," and writhing about mechanically as if in great distress; mouth generally open, sometimes smacking the lips, and all the time lolling out the tongue. *Has not sucked* since it was taken yesterday (thirty-four hours); tried twice, but did not succeed. As the jaw is "fallen," it is easy to put the nipple into the mouth, but *from want of suction power, it cannot draw the breast at all*; seems to mumble it. The breast being full, some little milk was discharged into its mouth, which was swallowed. It appears to be *tired, worried*; grunts and moans perpetually. Breathing on the *panting* order. I requested the mother to lay it in the cradle, (where she usually kept it;) she did so, laying it *rather* on the back. This evidently aggravated all its symptoms. After watching its actions for eight or ten minutes, I had it taken up and applied to the breast again, but it *could not suck*. It champs the nipple a time or two, looks fatigued, rests, and lets go entirely. It gapes, pants, moans, grunts, writhes about, lolls out the tongue, and then pukes by a sort of regurgitating process; but this affords not the slightest relief. I had it applied to the breast again, but *not a drop of milk was drawn*. Its bowels are somewhat disordered.

When I entered the room, the mother had the child in her lap, lying on its back, the occiput supported by her arm, the head rather hanging over it; thus making the greater degree of pressure low down towards the foramen magnum. I inquired if she had kept the child on its back or sides mostly. "Oh! Doctor," says she, "I always keep my babies on the side,—never lay them on the back." While these words were being uttered, she held the child as above described. I now requested her to put the child to bed, and show me how she laid it; she put it in the cradle, and laid it, *not* upon the back, true, nor upon the side, but diagonally between the two.

It was a fine, large, plump-looking child; had the roundest, smoothest, prettiest head I ever saw. I ran my hand around the head to discover the relative position of the occiput and parietals; but I did not even discover the lambdoidal suture, much less any irregularity in the bones. This would have satisfied almost any observer. He would have said, "Well, the mother *says* she has kept the child on its side, and I can find no displacement of the occiput; therefore, this case is opposed to the theory of occipital displacement." This logic did not satisfy me, because I *knew* that the edges of the occiput must be either *within* those of the ossa parietalia, or *exterior* to them; and I *knew*, moreover, that, if the latter was the case, the child's position had been managed correctly: but if the former, that it had never been lain on its side *properly*, at least for any length of time.

By applying what I call the *test method*, (described on page 68,) I

soon discovered that the edges of the parietals were *exterior* to those of the occipital bone; that the latter was movable by pressure from behind; and that the left edge of the occiput was a *little* more displaced than the opposite one, which was shown by the greater prominence of the edge of the left parietal. By pressing forcibly on the central part of the "*pars occipitalis*," with both of my thumbs, it was easily depressed, and all the child's *distresses* and mechanical manœuvres were instantly aggravated, producing, however, no convulsive movements; but a spasmodic *quivering* of the *left* hand appeared, just as the pressure was removed from the occiput.

Well, the mother had laid it in the cradle, upon what mothers usually term *the side*, i. e., neither on the back nor on the side, but with the face looking in the direction of a line drawn diagonally between "a perpendicular and horizontal." I now tried what I call laying a child on the side. I "*batted*" a pillow up with more feathers at one end than the other, thus making a soft "*inclined plane*." The child was laid lengthwise the pillow, on its side properly, with its face looking directly to the horizon, so that the weight of the head would be sustained on the surface embraced between the parietal protuberance and the outer edge of the orbit. As soon as the child was placed in this position, the mother exclaims, "Why, doctor, I have, as I told you, always laid the child on its side, but nothing like *so much so* as that."

In a very few minutes, perhaps not more than five, the child showed manifest symptoms of improvement. It soon got perfectly quiet; the moaning, "*screwing and twisting*," all ceased; the breathing became calm, regular, and free, without any *panting*; and it slept easily and sweetly. After awhile it waked; would occasionally let the lower jaw "*fall*," protrude the tongue gently and smack the mouth, like it was tasting something good; would occasionally open its eyes and look around, but without any motion whatever; indeed, it was wholly relieved, and that in the short space of 30 minutes. I left it for the night at 9 o'clock, with the injunction to keep it on its side *properly*, not having ordered any medicine. It took the breast at 11 o'clock, (after having lain on the side for two hours and a half,) and sucked well, drew it strongly, went to sleep immediately afterwards, and rested finely all night.

On the next day, (Oct. 2d, 7 A. M.,) the child was well, but the occiput was *not yet exterior* to the parietal bones; persevere with position.

7 P. M.—Occiput not quite right yet; child quiet all day; sucked well; no moanings, stretchings, gapings, or distress of any sort; bowels have not been disturbed since the change of position last night.

Oct. 3d, 8 A. M.—The occiput is now right; is plainly *exterior* to the parietals, but can only be detected by the peculiar method already described. I directed the mother to keep the child on its sides a day or two longer, and then to lay it in any position she pleased.

Now, there are some, (particularly those who have preconceived *opinions* to uphold,) who may doubt that this was a case of trismus. What was it, then? Heretofore we seem to have been carried away by a name, or by *notions*. For instance—one will say, "I saw a case very much like trismus, the other day, in a child a week old; it *could not suck*, but then its jaws *were not locked*, for I could force them open by putting my finger between them." He, led off by a *name*, had fixed in his mind the *locking* of the jaws as the characteristic feature of the disease, when all the world knows that, in *trismus nascentium*, the jaw is just as apt to be "*fallen*" as "*locked*." Another will relate a case, occurring, perhaps, on the third day,

giving every essential symptom of the disease, and then say, "but there were no tonic spasms; nothing, in short, characteristic of tetanus." He, too, had assumed one of the unvarying features of traumatic tetanus as pathognomonic of this disease.

Here let me say, that there is one symptom of trismus nascentium, which is uniform, makes its appearance early, and (in conjunction with others) is a certain diagnostic; and that is, *the difficulty of sucking*. The child may have no tonic rigidity; clonic spasms may be wanting; it may even swallow with some degree of freedom; its jaws may not be locked; it may possibly sleep well, (perhaps too well;) its bowels may be in proper condition; but if it goes long *without sucking*, if it *cannot draw the breast*, and if this cannot be accounted for by some competent physical cause, such as hare-lip, cleft palate, sore mouth, &c., then, I say, it has trismus. Let it then be remembered, that this *inability* to exercise the *suction power* constitutes the chief and almost the only unvarying early symptom of the disease. *It is pathognomonic, because unvarying*; but it never exists alone; it is always attended by other symptoms, which ought to arouse suspicion at once; such as moaning, sleeplessness or drowsiness, stridulous breathing, borborygmi, diarrhoea, dysentery, whining, fretting, writhing, &c., all evidently manifesting some general derangement of the whole machinery. So well understood is this amongst the negroes, who have lost children with this disease, that they recognize it at once; they look for this *difficulty of sucking* with the greatest solicitude, and when it occurs, they give up the child as irretrievably lost. They, with their unfortunately practical experience, will recognize the disease long before a physician, who is unaccustomed to it, will begin to suspect its true character. Indeed, physicians generally do not recognize it till it has advanced to the last or fatal stage. I well remember treating a case (ten years ago), when I thought the child was labouring under colic; it did not occur to me that it *could not suck*; I only thought that it *would not*, because it was in too much pain. My eyes were not open to its real danger, till the supervention of spasms, which soon carried it off.

It would be fortunate, then, if we had some unfailing sign of this dreaded malady, so that we might recognize it at once, and apply the appropriate treatment. The *inability to suck*, I have pointed out as that sign.

I will now go on to the consideration of a class of cases, which I shall denominate *trismoid*, for the simple reason, that they are wanting in some particular points which serve to characterize *pure* trismus, and yet present a chain of phenomena belonging to this disease, evidently produced by the same mechanical agency, and relieved in the same speedy manner. More properly speaking, they constitute the initiatory stage of trismus, lasting, however, for a long time without developing it fully.

Mrs. S——'s child, male, aged three weeks, when about eight days old, was noticed to be colicky; has been so ever since, with a constant gurgling of wind in the bowels; for two days past has not sucked so well nor so strong as usual; has a snuffling and wheezing in the throat, like it had taken cold; has not slept so well for a week past as it ought. It is a very stout child; head large; bones well ossified; occiput *apparently* all right; but a proper examination shows it to be "slightly" overlapped by the parietal bones; child lies in a crib on a nice soft bed. The mother says she lays it on the side. I requested her to show me how she laid it on the side. She seemed quite astonished at my insisting on such a simple matter, as if there

could possibly arise a question on that point. However, she put it in the crib, and laid it (as all mothers do, who say that they are in the habit of laying their children on the side, *i. e.*) diagonally on the side. I now showed her how to lay it properly on its side; no medicine was given. The child rested well that night, better than it had for two weeks. The colic, gurgling of wind, wheezing, and "slight" difficulty of sucking all disappeared directly, and in thirty-six hours the occiput was occupying its proper position—exterior to the parietals. The change in the relative position of the bones, could only be detected by the proper method of examining it.

Mrs. A——'s child, male, six weeks old, had diarrhœa and colic; rested badly at night, and fretted very much during the day; was rather a puny looking child; had never appeared to thrive; occiput under the parietals. I had directed the mother how to lay the child, when it was but a few days old, but my advice had not been followed, and, therefore, the occiput could not get out of its prison bounds. I gave no medicine, but simply placed the child properly on its side, enjoining the necessity of keeping it so till I should order otherwise. In less than twenty-four hours, it was wholly relieved, and in forty-eight hours, the occiput occupied its only safe position on the outside of the parietals. It had no return of the symptoms, and began to fatten from that time.

Mr. N——'s child, male, nearly four weeks old, appeared to be doing well for the first eight or nine days, except that it drew the breast feebly; sucks well now, (March 13th, 1847.) It makes a constant moaning, distressing noise, day and night, but only when it is lying down; has occasionally a panting respiration; opening the mouth and protruding the tongue, like it was trying to get a hair or some foreign substance out of the mouth; twisting round the head and writhing about, as if in pain. All this was supposed to depend upon the colic, and the father thought that he had *prima facie* evidence of it, from the fact that he could temporarily suspend the symptoms by laying the child on its belly, across his lap; but they invariably returned when he would lay it down. Slamming a door, opening a window shutter, or any sudden noise, (even when slight,) easily wakes it up in a fright. It has a bowel complaint, which has persisted despite of every remedy, having appeared with the other symptoms about the ninth day. The attending physician has been giving chalk mixtures, carminatives, &c., without the slightest good effect. It had no tonic rigidity; no clonic spasms; no locking of the jaws; no stoppage of the suction power, and was not, therefore, a case of trismus; but the age of the patient, and the symptoms, clearly indicated its *trismoidal* character.

The bones of the head were remarkably well ossified. The child had never lain properly on its side, though it had never been kept flat on the back. Occiput "slightly" under the parietal bones, more so on the left than the right side, particularly down towards the mastoid fontanelle, discoverable only by the correct method of examination. I gave no medicine, but placed the child properly on its side, with orders to persevere till it should be relieved. In less than a day, the diarrhœa and all its distresses disappeared; and on the third day, the occiput was found to be exterior to the edges of the parietal bones, which, to the practised touch, could be easily discriminated. There was no return of any symptom of the disease afterwards.

Mr. May's child, male, is now just nine days old, (Jan. 30th, 1847.) Has been perfectly well till last night. About midnight it was observed to groan, and make a very distressing noise, which has been kept up with

little intermission during this whole day. Can suck, but seems to be restless and uneasy, constantly opening the mouth, and protruding the tongue. Has kept the eyes closed all day, even when not asleep; has borborygmi, with looseness of the bowels, and manifests, in its actions and general appearance, so many of the symptoms of trismus, that the father felt satisfied that he would lose the child, as he had lost one before of this disease. The mother had it in her lap, lying on its back. The father said, that, having heard of the danger of a dorsal decubitus in producing this dreadful malady, they had been particular to keep the child on its sides, for the express purpose of preventing the disease. It lay usually in a cradle, day and night, with a pillow *cross-wise* under its head, which thus formed a concavity fitting the head exactly, and thereby preventing a *proper* lateral decubitus. The head was large, round and smooth, well-ossified—fontanelles very small. Occipital region felt smooth and regular, but by the application of the method so often alluded to, it was easy to detect a *slight* inward displacement of the edges of the occiput, thus proving that the child had *never* been laid, for any length of time, on its side, the word of the parents “to the contrary, notwithstanding.”

While examining the occiput, (the child being very quiet,) I pushed it in forcibly on the brain—the consequence was, that the displacement was now perceptible to the eye; whereas, before it could only be recognized by the touch. This pressing-in of the bone caused increased uneasiness to the child, as manifested by borborygmi, discharge of feces, a writhing about, opening the mouth, protrusion of the tongue, and a general restlessness. Before this disturbance of the bone, the child was lying perfectly quiet, and had been so for some time. Of course, I do not call this a case of trismus, because there was no permanent loss of the *suction* power, or control of the jaws; but it would, doubtless, have resulted in this, if nothing had been done. I gave no medicine, but instead of placing the pillow *cross-wise* the cradle, I put it *lengthwise*; and showed the mother how to lay the child properly on the side. It was almost instantly relieved of *all* its little distresses, and never had the slightest symptom of a return of them. It slept sweetly all night, and next morning the occiput was *exterior* to the parietals. It was kept on the side for twenty-four hours longer, when the mother was allowed to lay it as she pleased.

Mr. Brewer's child, male, (born 7th Sept., 1847,) has never appeared to be well; cried and screamed all day, the day it was born. It is now between three and four weeks old, and *has never slept at all, unless when under the influence of an anodyne*; “never slept a wink yesterday;” is all the time restless; bowels in a very bad condition; passages curdled; has a dozen or more in the twenty-four hours; has a sort of straining, or bearing down, often, when the bowels are not moved; during these paroxysms of *straining*, the child turns red all over, and looks like the blood would gush out of its face. On the 9th and 10th days, it was taken with spasms, which are described as being intermittent, or clonic, and seemed to draw his head backwards. A dose of calomel had been given on the morning of the 9th, just before the access of the spasms. He has sucked well, vigorously all the time—has never vomited more than two or three times. Has been dosed constantly with paregoric and Dewees' carminative. Has taken, frequently, as much as twenty drops of paregoric, and twenty-five drops of the carminative, before quiet and sleep could be induced.

It is natural for infants to sleep almost all the time, unless when nursing;

and when we find a child exhibiting the singular phenomenon of perpetual wakefulness, we must feel anxious to "know the why and the wherefore." Physicians had seen this child, and examined its head, to ascertain if there was any irregularity in the bones to account for all this derangement; but none was found. The child had been laid (as the parents say) on the side; but it had been kept in a cradle, and I affirm that it is impossible to lay a child *properly* on its side in a cradle as usually fixed.

Well, it was a fine, large child; cranial bones well ossified; head round, smooth, even and regular to the feel. No one could detect any irregularity in the relative position of the occipital and parietal bones by sight, nor even by touch, unless examined in the peculiar manner so often alluded to; and then there was no difficulty in ascertaining that the edges of the occiput were *underneath* those of the parietals. I placed the child properly on the side, on a pillow, *lengthwise* (in the cradle). At first, it was very restless, and I persevered for thirty minutes before the least effect was produced; after this, it went to sleep, slept well, and was quiet all day, for the first time in its life, without the administration of an anodyne. The bowels got in a good condition immediately after a proper position was instituted, so as to take the pressure from the occiput, and allow it to gain its normal relations. I saw the child six days afterwards, and found the occiput *exterior*, requiring, however, a nice examination to detect it.

I could relate several cases more of this *trismoid affection*, but there is such a sameness in them, that these five will suffice. They are important, inasmuch as they are of not unfrequent occurrence, and constitute a class of infantile diseases that has never been understood. They are important, too, because, unless controlled, they progress slowly, but very surely, to a fatal termination; either by general convulsions, or by marasmus and exhaustion, the consequence of a prolonged diarrhœa.

Who, in a practice of ten years, cannot call to mind some similar case, where the little victim was dosed with carminatives, or purgatives, or astringents, or baths, or all? where, perhaps, the symptoms persisted for an indefinite period, despite of everything that could be done! or, where, may be, they were relieved speedily; and as the physician supposed, at the time, by the potency of his prescriptions; when, in reality, it resulted from an *accidental proper position* after a change of diaper, or removal from a bath. Does not this *accidental* way of curing the disease fully explain the secret of Dr. Eberle's* success in the treatment of trismus, by the application of blisters to the *neck* (and to the umbilicus)? What man in his senses would lay a child on its back when there was a blister on the nape of the neck? Does it not also explain the secret of cures effected in a case related by Professor Stone, of New Orleans, before the Physico-Medical Society, in which the mother smeared the child all over with sweet oil, and it was made whole? Was it the oil that effected the cure, or was it an accidental proper position afterwards?

A gentleman of my acquaintance, who has lost nearly fifty negro children of this disease, informs me that he once relieved one by administering a whisky-bath, but that he has bathed twenty in whisky since, without producing the least effect. Was it, then, the whisky that cured the child? Or, did it get well by a mere accident?

One of my own children, now eight years old, had trismus on the ninth day. The case was fully developed. It was nursed faithfully—too well—was held in the arms all the time. At last, after a night of the most pain-

* Western Lancet, Oct. 1845.

ful anxiety, the mother, exhausted and dispirited, laid the child in bed, giving up all hope of its recovery. To the astonishment of all, my child was in a few hours well. The sudden change was always a mystery to me, till the discovery was made that now engages our attention.

But I leave these circumstantial cases for the present, and pass on with such as are not susceptible of doubt. This brings me to the consideration of a class of cases, in which *position* alone cannot rectify the displaced occiput. This peculiarity, so far as I have observed it, depends upon one of two conditions: either the bones are too well ossified, and, consequently, too much impacted against each other to allow of any motion whatever; or else the occiput may be so *malshaped* as to present a physical barrier to a proper rectification of it. And here a surgical operation becomes indispensable to the safety of the child.

I shall introduce this subject by relating a case that occurred to Professor Harrison, of New Orleans.

CASE IX.—Professor Harrison, in a critique on my first paper, (*New Orleans Med. and Surg. Journal*, July, 1846, p. 90,) says—"The writer of this notice was called, Feb. 14th, 1845, to see the child of a gentleman residing in New Orleans. It was the third day from the birth of the child, and the father informed us that the labour had been a protracted one—that the child, soon after birth, had been seized with convulsions, which had been continued, at intervals of from one to three hours, up to the moment of our visit. We were also told that the physician who had been in attendance had retired, giving up the case as hopeless. The child's bowels had been evacuated, and it was a well-formed, stout infant.

"Upon examination, we found the patient extremely drowsy, as if suffering from cerebral congestion: we found, also, the pupils considerably dilated. There were no tonic spasms. During the examination, a convulsion came on, which lasted about ten minutes, and then ceased, leaving the child tranquil, as before. The examination being resumed, we discovered the injury spoken of by our author—namely, a depression of the occipital bone under the parietals. The depression was very great, but considerably greater on the right than on the left side.

"As warm baths, and, in short, everything usually resorted to in such cases, had been employed in vain, it struck us that the child might be relieved by an operation. We called on Dr. Hunt, and requested him to see the case with us, telling him the particulars, and mentioning that, if he agreed with us, we would, with the consent of the parents, perform the operation. Dr. Hunt coincided with us in the propriety of the operation, and having obtained the parents' consent, the operation was performed. It consisted in cutting down on the right side, where the greatest depression was—cutting through the soft union between the occipital and parietal bones with a common scalpel—and reducing the dislocation as much as possible, by means of the director found in the common pocket-case—using it as a lever.

"Immediately after the operation, the child was seized with a violent convulsion; but it was the last one it ever had. Up to the present time, (June 1st, 1846,) it has enjoyed uninterrupted good health, and is as fine and stout a child of its age as any in the city.

"In justice to Dr. Sims, we must also mention, that, in consequence of the wound on the right side, the child was kept reclining on its left. According to his views, this position may have had great influence in the happy issue of the case."

The following extract is from Professor Harrison's reply (dated New Orleans, Jan. 26th, 1847), to some inquiries touching this interesting case.

"The mother's recollection appears to be very distinct and positive. The information I gain from her is as follows:—The child was attacked with convulsions about twenty-four hours after birth. They were frequent and violent. The operation was performed fifty-five hours after birth, or thereabouts. The child had *not* taken the breast *before* the convulsions came on. It was tried once or twice, and on the first trial, the first convulsion occurred. It took the breast on the *second day after* the operation. I could not obtain the precise time, but the mother thinks the day *after* the operation, it swallowed a little milk and water. [*The italics are my own.*]

"The mother corrects an error into which I had fallen with regard to the convulsions after the operation. Instead of having but one, as I asserted in the Journal, she had them frequently for six hours, when they ceased entirely."

The *inability to suck* (which continued from birth till the second day after the operation), was alone sufficient to establish this as a case of trismus; but the convulsions appeared to mask almost every other feature. The point of most interest to me, however, is the operation, which Professor Harrison so successfully executed. The operation was greatly assisted by a proper position; for the convulsions did not cease till six hours afterwards; showing, that while the right side of the occipital bone had been elevated by the operation, the left had to get out by a slower, but seldom less certain, process, viz., that of position. Although a proper position will rectify the occipital displacement in the great majority of cases, still, my facts go to establish the justness, and, occasionally, absolute necessity, for resorting to the operation of Professor Harrison.

He deserves, and, I have no doubt, will receive, the credit of being the first to propose and to perform an operation for the cure of trismus nascentium.

It will be fortunate if we should be able to point out the peculiarities of such cases as will require surgical interference, so that we may proceed at once, without jeopardizing the life of the child by waiting the results of position.

With a view to this, I will relate

CASE X.—Dr. M——'s child, male, born on 10th Nov., 1846, after a labour of thirty-six hours. The doctor sent for me on the eleventh day, supposing that the child was suffering from the colic. For the first twenty-four hours, it had some difficulty about urinating. It had, for several days, a sort of belching, windy state of the bowels, attended by a writhing and constant moaning as if it had the colic—dejections small, frequent and curdled. Four days ago they were very copious, and of a yellowish-green; but for the last thirty-six hours it has been costive. It does not sleep at all—grunts and moans all the time, and occasionally screams out suddenly. Feet and hands have generally been cold. Had slight clonic spasms last night, for the first time. *Has not sucked at all* since yesterday. *Has never* sucked very heartily. Could not swallow last night. Would spit out every now and then, as it were, mechanically. The doctor did not think it had trismus—thought there was no occipital displacement.—Said the child had been kept carefully on its side to prevent the disease. Although the "gurgling in the bowels," and general colicky symptoms were conspicuous, still, it was no difficult matter to see at once the true cha-

racter of the disease. An examination of the occiput soon showed that its edges were *within* those of the parietal bones. I now wanted to be satisfied about its being "kept carefully on the side, to prevent the disease;" so I requested Mrs. M. to let me see her place it on its side. She laid it in the cradle, not on the back, nor on the side, (as I have before remarked,) but with its face turned in a direction diagonally between these two positions. Now, this is the position that every child is obliged to occupy that lies in a cradle—and why so? To prevent the child from falling out during the rocking process, the cradle is, of necessity, never more than half full of bedding. It has then to lie in a hollow, apparently scooped out just to fit the occupant. And if a child were laid properly on its side in such a murderous contrivance, it would be smothered directly; because its breathing would be obstructed by the pillow, or that portion of its bedding rising up by the sides of the cradle; so that it is obliged to lie, either on the back, or in this semi-lateral position, which as effectually prevents the occiput (in well-ossified heads) from getting *exterior* to the parietals, as does pressure from the dorsal decubitus. True, it does not push the occiput any further under the parietals, for the weight of the head falls exactly on that part of the parietal embraced between its protuberance and the lambdoidal suture, which locks, as it were, the occiput up inside; whereas, when the weight of the head falls on that part between the protuberance and the edge of the orbit, (as in a *proper* lateral decubitus,) the lambdoidal edge, instead of being *shoved on to* the occiput, opens, and allows this bone to get on the outside of it. Once outside, the lateral position continued for a short time, causes a slight approximation of the lambdoidal edges of the parietal bones, which serve as points of support to the edges of the extruded occiput, forever preventing its return, and affording perfect immunity from danger during the most prolonged dorsal decubitus. But to return to the case.

It was a fine large child—head remarkably well ossified—anterior fontanelle not more than half an inch across. The occiput was very peculiar. From the protuberance up to the apex, the "*pars occipitalis*" appeared to be too much *curved inwards*; which evidently prevented it from getting exterior to the parietal bones. It seemed to be but slightly movable, and quite impacted, particularly towards the mastoid fontanelles. I had the child placed properly on its side.

For one hour afterwards, it seemed to complain a good deal, moaning and writhing about almost constantly; then it got apparently more easy, moaning and grunting only occasionally. It then fell asleep for an hour, but groaned every now and then. The mother said it had not rested so well, nor so long, in twenty-four hours. This induced me to hope that a perseverance with the lateral decubitus might possibly do some good; yet I explained to the Doctor that an operation would probably be necessary, before the bones could assume their normal relations; but, that I did not feel warranted in resorting to it, till we had tried a proper position for a reasonable length of time.

I left at two o'clock P. M., and at three, the child took spasms, and had them off and on for about three hours, when the Doctor applied cold water to the head, which appeared to modify in some degree the convulsive efforts, without controlling them. About ten o'clock, it got a great deal worse—tonic rigidity was extreme; clonic spasms more violent; and it died at 1 A. M., exhausted and asphyxiated.

The following notes were made at the visit next morning:

The navel had healed beautifully. The ossification of the cranial bones was more perfect than usual; the anterior fontanelle very small indeed.

The edges of the occiput are *under* the parietal bones. Generally, after death, the fetal cranial bones are easily movable, the occiput being made to slide under, or over the edges of the parietals at will, by proper pressure with the fingers; but, in this case, there seems to be a perfect impaction; for the edges of the bones along the mastoid ends of the lambdoid suture can be made to slide (by considerable force), alternately over and under each other; while along that part of the suture from the curve of the occiput up to the posterior fontanelle, this bone remains obstinately under the parietals, despite of the strongest efforts to force it out. As before remarked, the occiput appeared to be too much *curved inwards*, which anatomical peculiarity accounts for the utter impossibility of rectifying its relative position.

I felt extremely anxious to ascertain whether this anomalous condition would present an insurmountable barrier to the rectification of the occiput, even by operation.

After long persuasion, Mrs. M. consented to let me make the attempt, provided it could be done without cutting. (For this proviso, I now feel thankful, as will be exhibited by a class of cases yet to be related.)

I ran a short, stout, narrow-bladed knife between the bones on the left side, about an inch from the posterior fontanelle, its point resting on the edge of the occiput; and making a lever of it, the edge of the parietal acting as the fulcrum, the occiput was prized out from under the parietal, and made gently to overlap it; but it instantly returned to its old position, by withdrawing the lever. I again prized it out, but it slipped back in like manner. I then prized it out, and had forcible pressure made on the edge of the parietal, so as to prevent its return, till I could in the same way prize it out along the right side; after which, the bone would remain in its proper position while the body was laid on the side; but would immediately return to its old place by laying it on the back. Thus proving, pretty clearly, that the child's life might have been saved, by a timely surgical operation.

It is very desirable to determine what cases will require surgical interference; and particularly, to determine how long we may safely wait, before we ought to resort to it. Life will occasionally depend upon the decision.

I would lay it down as a general rule, that, if the bones of the head were remarkably well ossified, if the occiput seemed to be immovably impacted under, and between the edges of the parietal bones, and then, if a *proper* lateral decubitus, persevered in for three or four hours, did not relieve or greatly ameliorate the prominent symptoms, I would feel no hesitation in resorting to Professor Harrison's operation (or a modification of it), for elevating the depressed bone.

But it must not be disguised that there are cases of this disease, in which the displaced occiput cannot be rectified by any means whatever. The child is then born but to die, and will generally manifest symptoms of the disease at an early period; indeed, most frequently from the very hour of birth.

Before proceeding farther, it may be profitable here to take a brief retrospect.

1st. I have related cases, in which trismus nascentium resulted from an *inward* displacement of the occipital bone; that displacement being easily detected.

2d. I have produced facts showing that the same state of things may exist, when the displacement is so *slight* as not to be recognized, unless by a peculiar method of examination.

3d. I have adduced a series of cases, exhibiting the same characteristics, in a minor degree, depending upon the same mechanical agency; and relievable in the same speedy manner, which I have, for obvious reasons, denominated *trismoid*.

4th. I have produced cases to show that the displaced occiput will occasionally require surgical interference, before it can be properly adjusted.

Thus it will be seen, that the cases, so far adduced, are all of one general character; all go to show that the disease is the result of pressure exerted at the base of the brain; and in all this, pressure was produced by an *inward* displacement of the occiput, differing, however, in degree from the slightest to the greatest.

This brings me to the consideration of a class of cases, in which the disease was not the result of an *inward* occipital displacement, (and dorsal decubitus,) as in the foregoing, but was plainly caused by an opposite state of things—by a prolonged lateral decubitus, with a position of the occiput *exterior* to the parietal bones. This relative position of these bones is the only proper one in extra-uterine life. While my facts, so far, would seem to establish the law that there is no safety, if the occiput be not *exterior* to the edges of the parietals, the following cases will show that there is danger, if it be carried too far.

CASE XI.—A negro child, male, born on Tuesday, the 4th of May, 1846, had been kept on its sides constantly, for the express purpose of preventing trismus. It did very well till Tuesday night, the 18th, (then two weeks old,) when it *refused to suck*, fretting and crying all night. Its jaws were closed, so as to prevent the introduction of the nipple, but could, as in all cases of this disease, be forced asunder by the finger. After much exertion, however, the nipple could be got into the mouth, and then it would suck tolerably well. On Wednesday, it was pretty quiet, but could not suck any better than during the night before. Thursday and Friday, its condition was much the same. It had no other bad symptom, besides this great *difficulty of sucking*. No tonic rigidity, and no clonic spasms, save the facial spasm, induced only when the mother attempted to suckle it.

I saw it for the first time on Saturday the 22d. At night it lay in the bed with the mother, *on its side, with its head resting on her arm*. During the day it slept in a cradle, *on its side*, with a pillow placed cross-wise under the head. The occiput was *not* pushed under the parietal bones; on the contrary, it overlapped them all along the lambdoidal suture, thus occupying its proper relative position.

At this time I was carried away with the erroneous idea of "spinal congestion and spinal hemorrhage," and thought it impossible for these to occur, when the child had been laid on the side, so as to prevent a stagna-

tion of the spinal circulation. I could not, therefore, understand how the disease was developed in this case. The fact that the child's head had been supported on a large pillow during the day, and on the mother's arm at night led me to suspect, that the sudden lateral flexure of the neck might possibly have something to do in the chain of causation; so I directed the mother to retain it on the side, but to place the pillow *lengthwise* the cradle; thus making an inclined plane of it, so as to prevent the crooking of the neck. In the evening, I found the child as before, not able to suck any better; but, as the mother had put the same old pillow *crosswise* under its head again, to this I still blindly attributed the persistence of the symptoms.

Once more I placed the child *properly* on its side, giving most peremptory orders to keep it so. Next morning (Sunday), it was no better, although the directions had been followed. The relative position of the bones was the same, the occiput overlapping the parietals very considerably. By compressing the parietal protuberances firmly between my hands, I found that I could very easily make their posterior edges approximate each other, thus lessening slightly the bi-parietal diameter, while the occiput was consequently thrown further outwards. I now, for the first time, suspected that the child had been kept too long on its sides; and that the hard arm of the mother had done the mischief, instead of the pillow. So, I directed a dorsal decubitus, the weight of the head to fall on the occiput. This, continued for two days, did not appear to improve in the least the *difficulty* of exercising the *sucking* process.

The only effect noticed from the dorsal position, was a separation of the parietals along the sagittal suture, putting the commissure on the stretch. The lateral decubitus was then tried for another day, but with no amelioration of symptoms, or modification of the relative position of the bones.

On Tuesday night (8th day of the disease), the child became worse, fretting and crying all night. It continued so for the next week, there being no important change till *Tuesday night again*, when it seemed to be much better, resting well and sucking more easily and freely; and in a week more all the trouble wore off, as it were, imperceptibly. For the last two weeks it had a diarrhœa, the dejections being of a greenish mucus, which continued, in spite of the usual remedies, for a good while after all difficulty of sucking was overcome.

The progress of this case was not controlled or modified by any active interference. It appeared to run its course and exhaust itself independently of anything that was done: observing, at the same time, a most remarkable hebdomadal periodicity in its various phases—for instance, it was born on Tuesday night, the 4th of May: was taken with the first symptoms of the disease on Tuesday night, the 18th (when two weeks old): was much worse on Tuesday night the 25th, and continued so till Tuesday night the 1st of June, when it got much better, and by the following Tuesday, 8th, nearly every trace of the disease had disappeared.

If this had been the only case of the sort that occurred to me, I should never have been able to reconcile it with those in which the occiput was *within* the parietals; but, fortunately, I have two others of a similar character, which throw more light upon the subject.

CASE XII.—Ann, primipara, belonging to Mrs. Somerville, was delivered of a male child, after a labour somewhat tedious, on Wednesday, the 6th of January, 1847. On Saturday the 15th (being nine days old), it became

very fretful, and *would not suck*, whined and cried all night. Same condition on Sunday and Monday, when it was sent to me. *It could not suck at all.* Its jaws were firmly closed. It had occasional clonic spasms; some tonic (flexed) rigidity of the extremities, with the thumbs thrown across the palms: could swallow very well when milk was put into the mouth, but could not exert the slightest suction power when the nipple was placed there. It did not seem to have an easy moment: groaning, writhing, whining, and crying in a half stifled tone all the time.

Its head presented a remarkable appearance, being flattened in front, mashed backwards, and elongated in the direction of the vertex to an enormous extent.

The occiput was *not* overlapped by the parietals, but was on the *outside* of them, in its proper place. As in the last case, the edges of the parietal bones appeared to be pushed too far under those of the occiput, particularly up towards the posterior fontanelle. By compressing the parietals laterally, just at the edges of the lambdoidal suture, and also by a direct but slight pressure on the occiput, just a little behind the foramen magnum, every symptom of the disease was greatly aggravated. Relaxing the pressure would relieve the symptoms immediately, or at least allow them to remain as at first. This experiment was repeated "over and over again," with the same unvarying results, modified in almost exact proportion to the degree of pressure.

The nurse who brought the child to me, said *she thought* it had been lain mostly *on its back*. This representation did not agree very well with the *exterior* position of the occiput; and I was at a loss how to reconcile this fact with the relative position of these bones; because, as I have had occasion before to remark, when an infant has been kept upon the back during the first week or two, the occiput is *obliged* to remain displaced *inwardly*, its edges being overlapped by those of the parietal bones, whilst a continued lateral decubitus will in nineteen cases out of twenty, reverse their relative position, which, being once accomplished, is never changed, at least in heads where the bones are well ossified.

From the perfect resemblance of this case to the one last described, I concluded that it, too, would become chronic: and accordingly gave that prognosis.

Having tried the experiment of laying the child in every position possible, I found that the semi-lateral decubitus, as well as the dorsal, had a decided tendency to aggravate all the prominent symptoms. And, that a purely lateral decubitus exerted a like influence in a minor degree, while a fronto-parietal posture seemed to ameliorate them. [Let me explain what I wish to be understood by these terms. The term *dorsal* explains itself. By *semi-lateral*, I mean, when the child lies neither on the back nor on the side, but in a position between these two, which will throw the weight of the head on that part of the parietal between its protuberance and the lambdoidal suture. *Lateral* is used when the weight of the head is sustained on the parietal protuberance: and *fronto-parietal*, when it falls near the outer edge of the orbit.] A careful *fronto-parietal* position soon ameliorated all the distressing symptoms. The child soon stopped crying and "writhing about:" had no chronic spasms after the first day, and no borborygmus. It slept well, but *could not suck*, nor open the mouth any better. It was changed frequently from side to side, but it always rested better on the left; because the parietal bone was not shoved under the

occiput to so great an extent here, as it was on the right side, and hence a less degree of compression was exerted upon the great nervous centre.

I retained the child at my own house, so that I might watch it the more carefully, having determined to puncture the scalp, and elevate the depressed edges of the parietals, if it should become necessary; but, as its condition had improved so much in twenty-four hours, I sent it home with proper directions for its management, and with instructions to bring it back to me if it should get worse. Being confined to my bed at the time with a long spell of sickness, and hearing occasionally that it was no worse, I did not see the child after this till Thursday the 28th of January, the thirteenth day of its disease, when it was again brought to me. I was surprised to find that it had been getting progressively worse, from day to day, till now it presented a most aggravated form of the disease. Its hands were closely clinched; forearms flexed upon the breast; thighs, legs, and feet all in a state of rigid demiflexion; there was no such thing as straightening them by any warrantable degree of force. It had frequent and severe spells of clonic spasm, with hard-featured grimaces, and a whining, barking, half-suppressed sort of cry. Jaws still locked—could swallow, but was wholly *unable to suck*; and had a diarrhœa superadded to its other symptoms. During the clonic spasms, its mouth is twisted to the right side, and its head bathed in a most profuse perspiration. The face looks quite placid, when not contorted by these horrible spasms, which recur spontaneously every few minutes, or are induced at any time, by a sharp sound, by motion, and by the gentlest titillation of the lips and nares; and also, by the evacuation of wind or feces, or else this latter is a concomitant of the spasm, which is, perhaps, more probable.

I looked upon the case now as almost hopeless, but, as a matter of experiment, I punctured the scalp over the lambdoidal suture on the right side, with the point of a short strong knife, and, making a lever of it, pryed out slightly the corresponding edge of the parietal bone, which produced a very severe attack of clonic spasms. I did not wait to see the effect of the operation, but sent the child home immediately, not hearing from it till I was able to visit it two days afterwards, when I obtained from the mistress a more correct history of the case.

She says, that immediately after the puncture of the scalp (two days ago), the child's crying was strong and natural, opening the mouth widely, so that the tongue could be seen distinctly—and this for the first time during the progress of the disease—and that it now rests better on the right side than the left. Before, it rested better on the left side, because the left parietal being less depressed, produced, of course, less compression of the brain; but now it lies best on the right side, for the reason that the slight puncture has, to some extent, elevated the depressed edge of the right parietal. She says, moreover, that, after the puncture, the child could extend the arms voluntarily, (a thing it had not done before,) but that the wrists remained flexed. To straighten the wrists, would be at the expense of flexing the forearms; otherwise it could not be done.

Mrs. Somerville also informed me, that the mother, up to the time I first saw the child, always kept it square *on its side*—nor does she remember ever to have seen it lying in any other position than this, *with its head resting on the mother's arm*. This statement differs from the one given by the nurse, and explains readily enough the relative position of the bones; for the constant pressure of the mother's hard arm on the parietal protuberance accounts for the inward *abnormal* displacement of the edges of

this bone. I say *abnormal*, because the displacement was greater than it would have been under ordinary circumstances, and greater than is necessary for holding the occiput in its proper place *exteriorly*.

It was now easy to understand how the child had been getting worse for the last twelve days, for Mrs. S. says, that the nurse, not a very intelligent negress, had told her, as I directed, to lay it on the side, and keep it so; and that she had followed the directions to the letter. This obedience to instructions, not sufficiently explicit, had the effect of driving the edges of the parietal bones further under the occiput than at first, and hence the aggravated state of the disease.

Mrs. S. had observed that the act of laying the child down, *always* induced violent spasms, which lasted for a long time, gradually yielding to a state of quiet and sleep, or rather stupor. She noticed often, that these bad spells could be instantly relieved by changing it to the erect posture, and that it could open its mouth wider, swallow better, and cry louder when erect, than when it was lying down—and that it was easier the more it was laid over on its face. Did not these facts, particularly when conjoined with the day's observation at my own house during the early history of the case, plainly point out the course to be pursued?—and the course which the good common sense of Mrs. S. would, in all probability, have taken with it, had she not been restricted by direct instructions from me (carried loosely and carelessly by the nurse), to keep it all the time on its side? Of course I ordered immediately what was so plainly indicated, viz.—to hold the child erect as much as possible, and when it became necessary to lay it down, to place it in the *fronto-parietal position*. This was at nine o'clock in the morning. I visited it seven hours afterwards, viz. at 4 P. M., and ascertained that *it had not had a single clonic spasm since the erect posture and fronto-parietal position had been observed*—whereas before, they were frequent; that it had slept quietly all the time—whereas before, it hardly slept at all, and was never quiet, unless in comparatively a comatose condition.

Sunday 31st, 11 A. M. It cried but twice last night; formerly it fretted and cried all night long. It now cries louder and freer, having less facial spasm. After dressing it this morning, Mrs. S. held it erect till it literally nodded itself asleep, when it was laid down, as before directed, without the slightest disturbance.

4 P. M. It has been asleep ever since last visit. It now has the power of turning the head spontaneously, notices any noise, and for the first time, sharp sounds do not excite clonic spasms.

Tuesday, February 3d. It sucked to-day for the first time since the disease set in (18th day). It was somewhat difficult to get the nipple into the mouth, but when it got a good hold, it sucked very well.

A further daily report of the case would hardly be profitable. From the very moment that the erect posture and *fronto-parietal position* were instituted, the child began to improve. Does it not exhibit in a wonderful manner, that a very trifling difference in position may exert the most powerful influence for good or evil? Thus, we see the disease developed while the child's head lay on the hard arm of the mother. We next see the urgent symptoms ameliorated by a careful position. Again, they are aggravated to a tenfold degree by a prolonged *lateral decubitus*, whereby the edges of the depressed bone are pushed farther under the occiput; and then again they are modified, for a time, by puncturing the scalp and elevating the bone. We now find them better when the child is held erect, so

that there is no pressure at all on the head: worse again when it was laid down in such a way as to drive the depressed bone further under. And finally, we see it immediately relieved of all the urgent symptoms, and gradually relieved of the whole disease, simply by attending to such a position, and such alone, as would prevent a pressure, which, from the very nature of things, is obliged to be expended upon the medulla oblongata.

Even after the predominant or urgent symptoms had been relieved, there were still evidences of some persistent derangement of the symptoms. For instance, its face looked hard, furrowed, and old, its hands remained shut, with the thumbs thrown across the palms, and the thighs, legs, feet and toes remained in a state of rigid demiflexion. These contractions all gradually gave way, but were something like two months in doing so. During this time, I would occasionally puncture the scalp over the lambdoidal suture, with the point of a crooked awl, and prize out the edges of the parietal bones, and always, with the effect of greatly modifying the rigid flexures of the extremities. The operation, being simple and safe, was frequently performed, without the loss of a drop of blood, and invariably with the direct effect above described, thus showing plainly that it was pressure on some part of the great nervous centre, which, irrespective of every other condition, was producing all the mischief.

CASE XIII.—A negro woman, Frances, gave birth to her third child, a mulatto, on Monday, the 8th February, 1847. Nothing unusual in the labour. It seemed to be doing well till Friday the 12th, when it fretted all day, but did not refuse to suck till about six o'clock P. M. It rested pretty well, however, until midnight, when it waked up crying and whining, and *could not suck at all*. It continued in this way all day Saturday. I saw it late in the afternoon, and immediately recognized the disease. It had been kept all the time on its sides for the avowed purpose of preventing trismus; but *its head rested on the mother's arm*, night and day, whether it was applied to the breast or not.

Occiput occupying its proper relative position *exterior* to the parietals; but these have been, by the hard arm of the mother, pushed farther under the edges of the occiput than is compatible with safety. I cautioned the mother against the danger of supporting the child's head on her arm, and as there was nothing urgent or alarming about the case, the *inability to suck* being the most prominent symptom, I told her that the disease would, in all probability, become chronic; that she must not feel uneasy as to the result; that if it should get worse, I would operate on the bones of the head, and thereby relieve the disease; that there was no immediate danger, and I did not therefore deem an operation now necessary, or even justifiable. So I left without making any other prescription than a frequent change of position, merely guarding the mother against the danger of supporting the head on her arm.

Being exactly like the two cases last related, I thought it would run the same long course, and eventually get well, for my mind was full of the idea of *spinal hemorrhage*, and I supposed that, while a child was kept on the side, this could not occur, and that death could hardly take place without it, and therefore that I could safely afford to watch the case. I felt no uneasiness at all as to the result, but I was very greatly mistaken. My confident manner of speaking deceived the mistress and the mother of the child, and although it continued to get worse very rapidly after my visit, still I was not apprised of its situation. Being called some distance

into the country early the next morning, I did not return till late in the afternoon, and was somewhat surprised when my friend Dr. Boling informed me, that he had been attending my little patient all day, that he thought it would die very soon, and that (as he jocosely remarked), "I had better hasten to it and see that it was placed in a *proper position*."

When I arrived, I was astonished to see it in what I usually considered the fatal stage of the disease. Tonic rigidity extreme—clonic spasms violent and very frequent, following each other in rapid succession—head deluged in a most profuse perspiration—perfect inability to swallow—pulse imperceptible—respiration very frequent (138) and panting. Really, the child looked as though it would die directly. When I left my office, I picked up a crooked awl, with which I intended to puncture the scalp, and push out the edges of the parietal bones; but, as it then appeared to be moribund, I feared to make the attempt, lest its death should be attributed to the punctures with the awl. For experiment, however, I turned the child over on its belly across the mother's lap, with its chin resting on her knee, so as not to obstruct its respiration, while I stooped down to watch the expression of countenance. Very soon, the panting and spasms ceased—the hands became relaxed—the mouth fell open, and the child got quiet. For a moment, I thought that this new position had done wonders, in the way of relieving its sufferings, and, perhaps it may, for I soon discovered that it was (to all appearance) dead. I took it in my arms, and turned it over on the back, secretly congratulating myself that I had not punctured its head with the awl; when it gave a gasp, and a slight spasmodic quiver thrilled gently, but suddenly, through its whole frame. The mistress, the mother, and all present, thought the child dead. I gave it a shake, and threw some water in its face, to excite, if possible, the respiratory act, which produced no more effect than if it had been thrown on a stone. While wiping its face, it had another quivering to agitate its whole body. I now quickly turned it over, punctured the scalp along the lambdoidal suture, and prized out the edge of the parietal bone. This produced a general spasm,—then another—and another—and a gasping respiration, the eyes flying open—all resembling very much the effects of electricity suddenly applied to a body just dead. The other side of the head was punctured, and, in like manner, the edge of the other parietal bone was pushed out. The breathing improved; indeed, became regular. The tonic rigidity of the extremities returned. The jumping clonic spasms were re-established, and the child was recuscitated. All this appeared to be the result of motion, communicated to the nervous centre, by prizing out the edges of the parietal bones, which first excited general muscular contractions, and a gasping respiration, whereby the vital spark, not quite extinguished, was again lighted up. These punctures and prizings had the effect of elevating to some extent, the depressed edges of the parietal bones, but the occiput was not forced under them.

After this, the child was placed carefully in the *fronto-parietal* position (before described), with the view of preventing the further displacement of the edges of the parietals.

10 P. M.—It has now been five hours since the occurrence last described. The occiput is occupying about the same relative position, *exterior* to the parietals, as when I left. The edge of the right parietal seems not to be too far under the occiput; but that of the left is, especially up towards the posterior fontanelle;—so I punctured again with the awl, and prized out this side a little more, but not enough to change the relation of

why take up time with these physiological explanations? It is enough to point out the simple truth of mechanical pressure, and to demonstrate its ultimate expenditure.

Let us now see what is the result of pressure on the parietal bones, when the occiput is *exterior* to them. Give them, then, this relative position. Now look, as before, through the opening made by the removal of the os frontis; then compress the parietal protuberances laterally, so as to cause their lambdoidal edges to approximate each other, thus diminishing the bi-parietal diameter—and what is the consequence? Why, the posterior lobes of the cerebrum are compressed, and pushed down against the tentorium; the occiput is thrown out from its vertical direction, which causes a stretching of the tentorium; the cerebellum is consequently squeezed up between the tentorium above and the occiput below, and is thus made to slide forwards, pushing the medulla oblongata into its bed in the cuneiform process of the os occipitis, and compressing it there just as certainly and as effectually (though not quite so strongly), as when the pressure was made directly behind on the occiput. This is no guess-work—it is matter of absolute certainty, of mathematical demonstration. Thus we see that the apparent contradiction, in the two classes of cases, is easily reconciled; and that the disease in both results from a pressure, which, coming from opposite directions, is shown to be expended at precisely the same point. In the second class of cases, the pressure being less direct, and of course less powerful, accounts sufficiently for the disease being milder, and becoming chronic.

If it should be asked, “Do I relinquish the idea, formerly advocated, that a *spinal hemorrhage* is essential to the disease?” I answer, yes. I entertain no mere opinion which I will not give up at once if facts do not sustain it. Was there ever a more unequivocal case of trismus than the one last related? And yet the brain and spinal marrow were *both perfectly bloodless*. This was all explained by the position in which the child had been placed and retained, from the hour of birth up to the very moment of death. Does it not prove “that, under certain circumstances, a child may die of trismus in its most aggravated form, and yet have no extravasation within the spine?”

But that the greater number have this *spinal extravasation*, is proved fully by reference to different authors on the subject. For instance: Matuszinski observed twenty-five fatal cases. Post-mortem examinations were made in twenty. In sixteen, there was a *spinal hemorrhage*, and in the other four, there was none. How is this discrepancy to be accounted for? Why, every individual case must be studied by itself, and be decided on its own merits. I have known some cases to be developed at midnight, and to die in three or four hours; and I have heard of others that did not live six hours. Now, in these, I should not expect to find the organic change spoken of, because they die of asphyxia before there is time for

any organic lesion to take place. But the great majority of cases live twenty-four, thirty-six, or forty-eight hours, or longer. In these, there is every probability that we will find the *spinal extravasation*, because the dorsal or semi-lateral decubitus (ordinarily observed), will cause a gravitation of the blood, and a stagnation of it, in and around the spinal canal, to such an extent, as to result in this extravasation, which could be prevented only by a very decided lateral decubitus, but which no one would, *à priori*, think of adopting.

What, then, is the cause of death in this disease? Why, they all die of laryngismus (and its immediate consequences), caused, no doubt, by pressure on the eighth pair of nerves. Relieve the clonic spasms, and, with them, the spasm of the glottis, and the other symptoms are of no importance. Look at Case XII., where the tonic rigidity continued for two months; where the expression of countenance was trisimal all the time; where the difficulties of sucking lasted for several days; and yet, the very moment that the clonic spasms were arrested by a proper position, the child was evidently out of all danger. This fact suggests a very important lesson in such cases as are not susceptible of being remedied by position, or by an operation, and that is, to resort to tracheotomy* to prolong life till nature can accommodate the brain and nerves to the pressure, or till the nutritive function shall have effected the necessary changes in the shape and position of the parts exciting the morbid influence.

A case occurred to me, last December, which would have justified this procedure. After a tedious labour, the child (a fine large boy), was still-born. With the establishment of respiration the first symptoms of the disease were manifested. The inability to suck, and the clonic spasms, existed from that time. The occiput was considerably depressed, and (as in Dr. M——'s child, Case X.), appeared to be too much curved in, up towards the apex, thus presenting the segment of a smaller circle than that described by the edges of the parietal bones, and could not, therefore, be made to overlap them. I tried a well regulated position for half a day, but as the child got worse every hour, I determined to resort to the operation of puncturing the scalp, and elevating, if possible, the edges of the depressed bone. This was easily done by means of a shoemaker's awl, the curve near the point resting against the edge of the parietal as a fulcrum, while with the point the occiput was prized out. But I did not succeed in this way; so I followed the plan of Dr. Harrison, and cut down on each side of the lambdoidal suture; then with the flat end of a strong probe on one side, and a common director on the other, I could push out the edges of the occiput.

The effect of this prizing was most satisfactory. All the urgent symptoms were immediately modified or controlled by it, but would instantly return with all their violence, by letting the bone fall back into its depressed position. This experiment of prizing out the occiput was performed fre-

quently, with the same unvarying results. But it could do no permanent good, because the peculiar shape of the occiput prevented it from overlapping the edges of the parietal bones. Holding the bone thus, did not suspend the disease—it only mitigated the symptoms, so as to make them bearable—proving, beyond all doubt, that they were the result of mechanical agencies, and that, too, independently of every other consideration. I did not think of tracheotomy at the time; but if I should meet with another such case, I shall feel no hesitancy in resorting to it, simply with the view of keeping the trachea open till time and position could do the balance.

What are the immediate consequences to *vital organs* arising from pressure on the great nervous centre, produced by the displaced occiput? Why, the first and most dangerous is the spasm of the glottis, the *laryngismus*, which might *possibly* be averted by a timely resort to tracheotomy. The next is the spinal congestion and hemorrhage, which can be effectually prevented by a proper lateral decubitus. And the last is a prolonged diarrhœa and a consequent marasmus, which cannot be controlled by remedies, as long as the pressure persists. Thus it is seen that the *immediately* dangerous condition is the strangulation, the closure of the glottis. Case V. is an example of what may be endured, provided the respiratory function is not interrupted. This child had trismus from the end of the first week, till it was nearly five months old, but from peculiar circumstances, the pressure was thrown high up on the occiput, and was expended, no doubt, principally on the mesocephalon, and hence the respiration was not obstructed.

I have shown that the ultimate expenditure of the pressure is upon the medulla oblongata and its nerves. If the symptoms were the result simply of compression of the cerebellum, then would the effect be crossed—exhibiting itself on the opposite side, when the pressure happened to be more on one side: but such is not the fact. For instance, in Mr. Winter's son (Case III.), "the *right* edge of the occiput was pushed *under* the corresponding part of the parietal bone, while the *left* was riding *over* its parietal neighbor," and it had "occasionally a little *spasmodic quivering* of the *right* arm and leg, but not of the *left*. The movements, or spasms, of the arm and leg were, as well as could be determined, synchronous." Of course this could not be from the position of the *left* edge of the occiput, for it was in its proper place, and when the *right* edge was made to assume a like position, every abnormal symptom vanished instantly. Hence it originated from pressure by the *right* side of the occiput, expended on the *right* side of the medulla oblongata. Cases VIII. and XII. illustrate the same law.

I might dwell upon some other points that need further investigation, but in the absence of a sufficient number of facts, it would be a waste of time.

It is not presumed that I have explained everything in connection with

this subject; far from it: much remains yet to be done. My observations are but a small beginning.

I have the history of several cases not included in my published papers. Of this disease, besides a long list of those denominated trismoid, twelve have been remedied simply by rectifying the displaced occiput.

I now leave the reader to judge how far the cases related will sustain the announcement made at the outset of this paper—"That trismus nascentium is a disease of *centric origin*, depending upon a mechanical pressure exerted on the medulla oblongata and its nerves; that this pressure is the result, most generally, of an *inward* displacement of the occipital bone, often very perceptible, but sometimes so *slight* as to be detected with difficulty; that this displaced condition of the occiput is one of the fixed physiological laws of the parturient state; that when it persists for any length of time after birth, it becomes a pathological condition, capable of producing all the symptoms of trismus nascentium, which are instantly relieved simply by rectifying this abnormal displacement, and thereby removing the pressure from the base of the brain."



AMPUTATION
OF
THE ENTIRE LOWER JAW,
WITH
DISARTICULATION OF BOTH CONDYLES.

BY J. M. CARNOCHAN, M. D.,

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TO THE PRESIDENT AND MEMBERS
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HONORABLE BOARD OF COMMISSIONERS OF EMIGRATION,
IN NEW-YORK,
By their obedient servant,
J. M. CARNOCHAN.

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JAMES KELLY.

OF CARNOCHAN'S CASE OF AMPUTATION OF THE ENTIRE LOWER JAW.

THE LOWER JAW—AFTER MACERATION.

N^o 1.



GRUBBS DEL. AD. NAT.

Lith. & Printed in Colors by Sarony & Mayors, N.Y.

- a. Condyles of the jaw*
b. Rami of the jaw—diseased
c. Body of the jaw in a State of necrosis, and seen as Separated during the Operation.

APPEARANCE OF THE PATIENT FOUR MONTHS AFTER THE OPERATION.

N^o 2



FROM A DAGUERRETYPE BY F. BAGE.

Look of Surgery & Hygiene, New York.

Upon the side of the face, the cicatrix is seen, shewing the line of the external incision; a similar incision made upon the opposite side, meets the other at the Chin.

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AMPUTATION

OF THE

ENTIRE LOWER JAW.

NOTWITHSTANDING the repeated instances on record of large portions of the lower jaw having been lost by accident or disease, surgeons appear to have been slow in admitting the possibility of practising amputation, either partial or total, of this bone. To Dupuytren was reserved the glory of having, in 1812, first removed, by a methodical operation, a portion of the body of the inferior maxilla; but since the innovation of the celebrated French surgeon, the operation for the partial exsection of this bone has been repeatedly performed. In the annals of surgery, there is an *allusion* made to the amputation of the *entire* lower jaw, by Walther, of Bonn; but I have not been able to trace the truth of it to an official source.

The following case will prove that this operation can be performed with success; and that the patient, although deprived of the chief instrument of mastication, may survive, and enjoy the usual condition of health.

Nicholas Donegan, aged 43, a farmer by occupation, was admitted into the New-York Emigrants' Hospital, March 7th, 1851. He was treated for some weeks, in the Medical Division, for typhus fever, and was afterwards transferred to the Surgical Department, under my charge. Upon examination of the patient, his face presented much tumefaction, and he complained of great pain, seated chiefly in the region occu-

pied by the inferior maxilla. Upon carrying the examination further, the lower jaw was found to be extensively affected with necrosis. All the external appearances denoting a cachectic condition of the constitution, with extreme debility and general prostration of the vital functions, were present. The patient stated that, during his recent voyage to this country, he had received a severe blow upon the lower jaw and side of the face. This circumstance, coupled with the cachectic condition following the attack of fever, appears, as far as can be learned, to have been the origin of the disease of the bone.

A tonic course of treatment was prescribed for him, and various local applications and lotions were resorted to, in order to allay the irritation in the mouth, and abate the fetor emanating from the disease. In a short time, the teeth became loose, and had to be extracted; the alveolar ridge became partially denuded; the swelling increased towards and over the rami and condyles; and the patient complained of excruciating suffering and depression. Nutritious diet and the various therapeutic agents, proper to improve and renovate his system, were persevered in; and soothing and astringent lotions and applications were unremittingly used. This plan of treatment was pursued for about three months; at the expiration of which time, it became evident that the disease of the osseous tissue was too deeply rooted to be affected by mere remedial agents. In fact, they were found to be entirely unavailing. The disease had now apparently seized upon the entire jaw; pus was abundantly secreted into the cavity of the mouth; the saliva was also thrown out in great quantity; and the fetor became almost intolerable to the patient himself, and to those around him in the ward. Constitutional irritation and hectic of a grave character had also set in; diarrhoea made its attack; and the patient was gradually sinking under the complications of his disease, and the terrific pain by which he was unceasingly tortured. It was apparent to me that the speedy death of the patient could only be avoided by removing the source of such intense suffering and constitutional derangement. The integuments over the disease, although much tumified, œdematous, tense and red, remained

free from ulceration; the vitiated secretions taking their exit by the cavity of the mouth.

On the 13th of July, a consultation was held, and an operation for the removal of the bone decided upon. The formidable nature of the operation proposed, together with the debilitated and cachectic condition of the patient, induced me to enter into full explanations, and to inform him of the great risk that would attend it. The matter was then left to himself, and at his urgent request, I proceeded to use my efforts for his relief. It was not thought expedient to administer either chloroform or ether, on account of the liability to asphyxia from the passage of blood into the wind-pipe.

The patient being seated on a chair, and the assistants properly arranged, an incision was first made, commencing opposite the left condyle, passing downwards towards the angle of the jaw, ranging at about two lines in front of the posterior border of the ramus, and extending thence along the base of the jaw, to terminate by a slight curve on the mesial line, half an inch below the free margin of the lower lip. The bone was now partially laid bare, by dissecting upwards the tissues of the cheek, and by reflecting downwards, for a short distance, the lower edge of the incision. The tissues forming the floor of the mouth, and situated upon the inner surface of the body of the bone, were separated from their attachments from a point near the mesial line, as far back as the angle of the jaw. The attachments of the buccinator were next divided. The facial artery, the sub-mental and the sub-lingual, already cut, were then secured by ligature. It was now seen that the bone was partially separated at the symphysis, and that the necrosis was complete from that point to the inferior portion of the ramus. The ramus itself was found diseased; the periosteum externally was inflamed, and in some parts easily detached. The tongue was now grasped and held forwards, while the attachments of the genio-hyo-glossi muscles were divided. A double ligature was passed through the anterior part of the root of the tongue, and entrusted to an assistant, in order to prevent its retraction upon the superior orifice of the larynx. A fatal case from the falling backwards of the tongue, occurred a few years ago, in the practice of an emi-

nent surgeon of this city; and a similar misfortune should always be guarded against, when the muscular attachments of the tongue to the posterior part of the bone behind the symphysis are divided. A slight force exercised upon the left half of the body of the jaw, broke the connection at the symphysis and at the angle, and this part was easily removed. The next step consisted in the removal of the left ramus. The external surface of the branch of the jaw, and of the temporo-maxillary articulation were exposed, by dissecting the masseter upwards, as far as the zygomatic arch. Seizing the ramus in order to pull the coronoid process downwards below the zygoma, it was found that the temporal muscle was rigidly and permanently retracted. This circumstance presented an unexpected difficulty, which was increased by the unusual development of this apophysis, and by the retraction also of the pterygoid muscles. Passing the forefinger along the inner aspect of the ramus, the situation of the internal and external carotids was sought for and recognised. The insertion of the pterygoideus internus was then felt and cut, grazing the bone in doing so; the lingual nerve, here in close proximity, being carefully avoided. Passing still higher up, the orifice of the dental canal, indicated by an osseous projection, could be felt; and the instrument, still guided by the finger, divided the dental artery and nerve. The knife was thus made to separate the tissues attached to the inner face of the bone, as high up as a point situated about a line below the sigmoid notch, between the condyle and the coronoid process. On a level with this point, at the posterior margin of the ramus, the transverse facial, internal maxillary and temporal arteries form a kind of tripod, the two last named branches of which should not be divided, if possible. It now became necessary to detach the tendon of the temporal muscle. As the coronoid process could not be depressed, I proceeded cautiously, by dividing the lower attachments of the tendon, by means of blunt curved scissors; and by using them and a probe-pointed bistoury, alternately—keeping close to the bone—a considerable portion of the tendon was divided. Deeming it not prudent to use freely a sharp cutting instrument, deep

in the temporal fossa, where the coronoid process was situated, I made use of a pair of bone scissors, curved flatwise; and by passing the blades of this instrument over the process, as far as its position would permit, the temporal muscle was detached; a small portion of the apex of the coronoid process being cut through. The ramus, now movable, could be made use of as a lever to aid in the disarticulation of the bone.

In order to effect safely the disarticulation of the condyle, I began by penetrating into the joint, by cutting the ligaments from *before backwards*, and from *without inwards*. The articulation was thus opened sufficiently to allow the condyle to be completely luxated. Blunt-pointed scissors were now used to cut carefully the internal part of the capsule and the maxillary insertion of the external pterygoid muscle; and by a slow movement of rotation of the ramus upon its axis, the condyle was detached, and the operation was completed on this side. By proceeding to disarticulate by the method here described, injury to the temporal artery, as well as to the internal maxillary, was avoided.

To effect the removal of the other half of the lower jaw, the same incision was made on the opposite side, so as to meet the first on the mesial line. The dissection was also similar; and by disarticulating the second condyle in the same manner as had been observed for the first, I was successful again in avoiding lesion of the temporal and internal maxillary arteries.

The annexed plate, No. 1, is a correct delineation of the inferior maxilla, after maceration, and exhibits the portions of the bone as they became separated during the operation.

The object I had in view, in shaping the external incisions, in such a way that an inverted V should be formed in front of the insertion of the genio-hyo-glossi muscles, was to leave a portion of integument so fashioned, that the suture-pins could be passed through the integument, and, at the same time, through the root of the tongue, at the point where its muscles had been detached from the inner surface of the jaw. The several tissues becoming thus incorporated in the resulting cicatrix, served to form a new bridle, somewhat analogous to the natural muscular attachments of the tongue to the genial processes.

The amount of blood lost was inconsiderable; the arteries divided, besides those mentioned, were the transverse facial, the anterior masseteric, the anterior parotidean, &c.; and these were secured as soon as divided. The bone being disarticulated, the flaps were adjusted, and the lips of the incision united, by eighteen points of twisted suture. The tongue was retained forwards after the dressing, by attaching the ends of the ligature already passed through its base, on each side, to a bandage passed vertically around the head. Forty-eight hours after the operation, the first dressing was removed. Union by first intention had taken place, and eight of the suture-pins were taken out. In ninety-six hours, the wound was again examined. Union was found to be entirely completed, and the remaining pins were removed. On the seventh day, it was thought safe to remove the ligature from the tongue. On the tenth day, the arterial ligatures came away; and on the fourteenth day, the patient was pronounced cured; not having had an untoward symptom since the performance of the operation.

The operation occupied fifty-five minutes, the patient having been allowed intervals of repose to recruit. It was performed in the presence of a number of professional gentlemen; and I was ably assisted by my colleague, Dr. A. V. Williams, by Drs. Dewees and Dixon, of New-York, and by Drs. Thompson, Whitehead, Smith and Bailey, resident assistants attached to the surgical staff of the Hospital.

The present appearance of the patient, upon reference to the accompanying plate, No. 2, will be seen to present much less deformity than might be expected from the severe mutilation which he has undergone. His general condition and health are good; and he is now able to perform any ordinary vocation. The ducts of Steno, on both sides, were necessarily divided in the superficial incisions; but there is no salivary fistula, the saliva taking its course into the mouth. The division of the branches of the facial nerve has not been followed by paralysis of the face; although for a time after the reunion of the incision, the orbicularis palpebrarum of the right side appeared to have lost its action to some extent. In grasping the chin, a thin cartilaginous deposit can now be

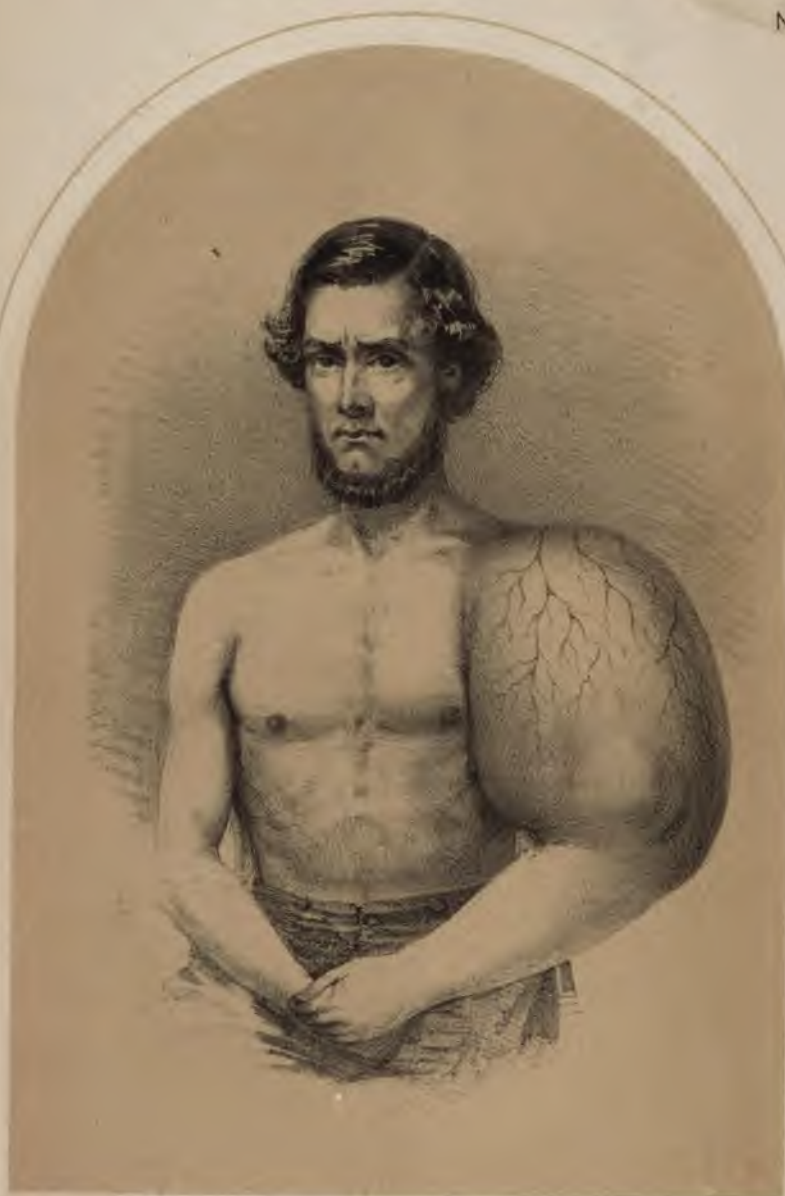
felt, extending, crescent-shaped, for about three inches, and occupying the position at which the bone was most diseased. Higher up, toward the glenoid cavity, no deposition of bone or cartilage has taken place. Injury to the bag of the pharynx, during the detachment of the soft tissues from the angle of the jaw, was carefully avoided, and fluids could be swallowed, in small quantities, immediately after the operation. Deglutition is now effected without difficulty. Articulation is sufficiently distinct to render his words intelligible, and although unable to masticate, he does not complain of difficulty in eating, breaking up, as he says he does, his food between the tongue and the palatal vault of the superior maxillæ.

New-York, 759 Broadway, Dec. 1851.



DR CARNOCHAN'S CASE OF AMPUTATION AT THE
SHOULDER JOINT.

NO 1.



DRAWN FROM LIFE BY JAS. FERGUSON

ETCHED BY G. BARNES & CO. N. Y.

APPEARANCE OF THE TUMOR OF THE HUMERUS BEFORE THE OPERATION.

APPEARANCE OF THE PATIENT THREE MONTHS
AFTER THE OPERATION.

Nº 2



ON THE SURFACE OF THE STUMP, THE LINE OF CICATRIZATION IS SEEN .

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AMPUTATION AT THE SHOULDER JOINT

FOR THE REMOVAL OF A LARGE

Osteo-fibro-cancerous Tumor of the Humerus.

RECOVERY OF THE PATIENT.

BY J. M. CARNOCHAN, M. D.

SURGEON-IN-CHIEF TO THE STATE HOSPITAL, PROFESSOR OF SURGERY IN THE NEW YORK
MEDICAL COLLEGE, ETC.

[FROM THE AMERICAN MEDICAL MONTHLY, SEPTEMBER, 1854.]

A CASE of fibro-cartilaginous tumor, involving a part of the humerus, and weighing eleven pounds, in which amputation at the shoulder joint was successfully performed by Sir Astley Cooper, is recorded in the Medico-chirurgical Transactions of London. Another similar case, in which the tumor removed weighed twelve pounds, is reported by Mr. Syme, of Edinburgh. In the following case, amputation at the shoulder joint was successfully performed for the removal of an osteo-fibrous tumor, involving the entire humerus, and weighing eighteen pounds and a half; being, I believe, the largest tumor of the humerus, thus treated, of which there is any mention.

Case. Francis Murphy, aged 30, a native of Ireland, married, stone-cutter by trade, of swarthy complexion, dark hair, and blue eyes, was admitted into the State Emigrants' Hospital, 18th March, 1854; had an enormous tumor involving the left humerus; stated that he was the youngest of twenty-one children, who were generally healthy, and that his mother and father were always in good health, the latter of whom, however, died at the age of 55, of some tumor about the jaw. About nine years ago, Murphy contracted syphilis, for which he was salivated.

precaution to use the American aneurism needle, the artery, at the depth of four inches from the surface, was secured without much trouble. As soon as the ligature was placed, a small cylinder of rolled muslin, of the diameter of the finger, was placed over the artery, and the ligature tied over this in a double bow knot, so as to be easily loosened and removed. My friend, Dr. Power, was entrusted with the care of this species of temporary tourniquet.

The patient was now drawn close to the edge of the operating table, so as to give freedom in making the necessary incisions for the removal of the arm. I had selected Larrey's method of amputation; for, if it be not always the best in ordinary amputations at the shoulder joint, it is by far the most proper mode of proceeding when this operation is required in cases of large tumors of the humerus, encroaching upon the shoulder.

With Langenbeck's short amputating knife, I made an incision, beginning a little above the acromion process, and extending for about five inches downwards, so as to separate the *deltoid* into two equal portions, and to pass a short distance below the level of the neck of the humerus. The arm was now drawn from the trunk. Placing the edge of the knife upon the anterior margin of the axilla, nearly on a level with the insertion of the *pectoralis major* and *latissimus dorsi*, a semilunar incision, with convexity downwards, was rapidly made across the anterior semi-circumference of the tumor, in a direction to strike upon the vertical incision. A corresponding semilunar incision was made across the posterior semi-circumference of the tumor, by directing the knife from the posterior margin of the axilla, beginning at a point opposite the commencement of the previous incision, and terminating so as to join it on the vertical incision. While these two semilunar incisions, which nearly embraced the entire circumference of the tumor, were being made, and that with rapidity, the hæmorrhage from the enlarged veins was appalling, the blood flowing, *en nappe*, in a torrent upon the floor. No time was to be lost; the flaps resulting from the incisions were quickly dissected back, and so maintained by an assistant, so as to expose the joint. Another assistant forcibly drew the arm downwards and forwards; the knife was made to enter the articulation from above, and to pass inside and behind it; and the operation was finished by carrying the instrument onwards, and dividing, from within outwards, the remaining soft tissues on a level with the inferior ends of the anterior and posterior semilunar incisions. Owing to the temporary ligature around the subclavian, the arterial hæmorrhage was trifling; the axillary, the two circumflex, and a few smaller arteries were promptly secured, and the patient re-animated by the applications of stimuli to the nostrils and by frictions upon the surface. The ligature under the subclavian was then loosened, but not removed.

A large number of pupils and medical gentlemen were present at the operation. The amputation was performed in thirty seconds, and was com-

menced as soon as the ligature was placed around the subclavian artery. I had the efficient counsel of my colleagues, Drs. Henry G. Cox and Ford; and I was ably assisted by my friends, Drs. Power, Gilligan, Brundige, and Abrams, and by the resident assistant Surgical Staff of the Hospital, Drs. Winer, Gould, Strowbridge Smith, Hagan, and Robinson.

Progress of cure. The following abstract is taken from the record kept by Dr. Winer, the senior House Surgeon:

The wound having been dressed so as to favor union by first intention, the patient was removed carefully to his ward, and placed in bed. At the evening visit the pulse was 84, and the patient inclined to sleep. At 9 o'clock he slept, and continued to sleep, with slight intervals, through the night, his pulse and respiration gradually increasing till 5 o'clock A. M., when the pulse was 128 and respiration 30, and short, slight subsultus. At 9 o'clock A. M. of the 25th, his tongue was dry in the centre, *Risus Sardonicus*, countenance anxious, and muscles of his nose expanding and retracting during respiration. Ordered beef tea and brandy. At 9 o'clock P. M., pulse 130, breathing easier. Ordered grs. xx. M'Munn's Elixir of Opium, and brandy at intervals.

9, A. M., 26th. Pulse 120, respiration fair, tongue moist, and has slept well during the night. Stimulants decreased, and ordered chicken broth. At 6, P. M., the wounds were dressed for the first time since the operation. There is attempt at union by first intention throughout the stump. Ligature around the subclavian removed. An anodyne at night.

27th, 8, A. M. Has passed the night well, and every thing promising. Pulse 106, and respiration full, tongue clean and moist, urine redder than natural. At 5 o'clock, P. M., the wounds are dressed, all looking well. An anodyne at night.

28th, 9, A. M. Pulse 112, regular and full—had a good night's rest. There is a slight discharge of laudable pus. Bowels have moved during the night. At 6, P. M., wounds dressed, all healthy. An anodyne at night.

29th, 10, A. M. Pulse 106—has passed the night well. Countenance anxious and patient irritable. An anodyne at night.

30th, 9, A. M. Pulse 102—passed the night well, skin moist. Discharge from the stump is increased. Appetite good. At 1, P. M., pulse 100, inclined to sleep, perspires profusely. At 5, P. M., the patient being engaged in an animated conversation with a visitor (against orders), hæmorrhage occurred from the stump very profusely. The patient bled a minute and a half before the arrival of the House Surgeon, during which time sufficient blood had flowed to saturate the dressings and the bedding, and

the lower part of the anterior flap the skin is red, tumid, and painful. An artificial opening is made over it, and two ounces of dark-colored pus discharged.

26th, 8, A. M. The patient is up, and walking about the ward.

27th, 8, A. M. Pulse 94; eats, drinks, and sleeps well. At 6, P. M., the wound dressed, the glenoid cavity granulating well; only a very slight discharge from the inferior opening.

30th, 8, A. M. Pulse 94, regular and strong; no pain in the stump, glenoid cavity entirely covered, appetite good, bowels regular, tongue clean, and sleeps well.

May 3d, 8, A. M. Pulse 90, regular and full, appetite voracious; very slight discharge of pus from the posterior counter opening.

14th. Discharged, cured, from the Hospital, the stump having become firm and entirely cicatrized. Vide plate No. 2.

Pathological description.—The skin, subcutaneous adipo-cellular layers, and a superficial stratum of muscular fibres superiorly, are normal.

A minute inspection of the tumor, and the appearance of its structure as seen by the microscope, induce me to believe that the morbid mass is one of malignant or cancerous character. In this opinion I am corroborated by my former colleague, Dr. Bowen, whose pathological researches have been very extensive. The tumor, when laid open by a vertical section, presented a striated, dull whitish appearance on each side of the centre of the mass, which was itself occupied by the remains of the altered and disorganized tissue of the shaft and extremities of the humerus. The osseous tissue here seems to be disintegrated and expanded, by deposit and growth of a dense, striated, fibro-cancerous structure, which bears a very large proportion to the expanded and altered bone: on passing the hand over each surface of the section, bony material is felt to be interspersed in acicular and foliated lamellæ, through the entire mass of the tumor, as far as its periphery.

The head and upper part of the shaft of the humerus is atrophied and expanded to near the surface of the tumor. The spongy structure of this part of the bone is destroyed.

The spongy structure of the lower fifth part is in a state of commencing eburnation, dense but readily compressible.

The soft parts surrounding the bone have a striated appearance, the striæ assuming a curvilinear direction. These are more clearly defined as the circumference is approached.

The centre of the tumor is occupied by bony detritus, and by a substance differing from the tissues which it has replaced; and this is supposed to be a malignant deposit,—1st. Because there is a large increase of substance; 2d. This great increase took place rapidly after a period of appa-

rently languid action—chronic inflammation; 3d. The new matter has but slight resemblance to any of the normal tissues which it has infiltrated or replaced; 4th. There has been a destructive process at work, and the destruction gives no evidence of having been effected by common inflammatory action.

It may be contended that the tumor was not malignant, from the presence of white fibre and the inflammatory condensation of the lower end of the bone. But, in point of fact, there is no incompatibility.

In the progress of cancer two distinct processes are in operation: 1st, The deposit and evolution of cancer granules and cells; and 2d, Inflammatory action excited by their presence.

Cancer cells are necessarily perishable, but the organizable product of simple inflammation may be converted into tissues analogous to those into which it is poured, or into a lower organization, as, for instance, white fibre.

New fusiform developmental cells are said to abound in malignant growths, and are converted into fibres to form the stroma.

This is denied by some, as by Vogel; but he admits that new fibres and vessels are present, and thinks they are dependent upon the influence of the preëxisting fibres, just as is the case in the growth of pure fibrous tumors.

Mr. Paget observes, that exceptions to the general rule of the wasting of the infiltrated tissues are often observed in the fibrous tissues and in bone.

The examination of the morbid preparation also shows that the formative processes have occupied the circumference of the tumor, while the destructive action has been confined to the centre, where evidently the disease commenced.

NEW YORK, *July 1st*, No. 2 Waverley Place.

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ON INJECTION
OF THE
BRONCHIAL TUBES,
AND
TUBERCULAR CAVITIES OF THE LUNGS.

BY HORACE GREEN, M. D., LL.D.

[From the American Medical Monthly, January, 1855.]

THE subject which I propose, in this paper, to consider, and the anatomico-physiological questions involved in this discussion, are, I believe, of sufficient importance in practical medicine to claim the special attention of the members of the medical profession. It is a subject which has been discussed recently in the London and other foreign medical societies, and it has received, moreover, the attention of some of the foreign medical writers of distinction. It is therefore quite proper that a question, belonging as this does more especially to American Medicine, should be brought before the profession of this country. But there is another reason why I have concluded to ask attention to the subject matter of this paper.

Having by many observations established the pathological fact, that certain lesions hitherto unnoticed by pathologists, are the cause of a very common and troublesome sympathetic affection, I prepared, several months ago, a paper on "Aphonia arising from organic lesions," which paper I thought to lay before the members of the New York Academy of Medicine.

But, I confess, a recollection of my earlier experience in advancing some peculiar doctrines in medicine, positively deterred me for the time from bringing my views before the members of the profession of my own city and country. Accordingly, at the request of a corresponding member of the London Medical Society, who to some extent had become acquainted with my views, I transmitted the paper to be read before the London Society. It was received and read, and, with the discussion it elicited, was published in many of the British journals. For this paper the thanks of that society and its fellowship were voted to its author.

Fully believing that I have made other important observations, if not discoveries, of a medico-chirurgical nature—discoveries which, I believe, will lead to important changes in the prophylaxis and treatment of pulmonary disease—I have deemed it to be my duty to bring these views, *first*, before a professional jury of my own city and country, giving to them the opportunity of proving or disproving, of receiving or rejecting, the propositions advanced.

It is well known that medication of the larynx and trachea, “after the manner of Trousseau and Belloc” (as the journals, and many physicians in America, have long been accustomed to say), has been practised not only by myself, but by many other physicians, both in this country and in Europe, and with an amount of success in the treatment of some of the diseases of these organs that has been highly satisfactory; few, I believe, at the present time refusing to admit the practicability and utility of topical treatment in certain diseases affecting the upper portion of the air-passages. Indeed, for a long time, it has not been deemed necessary to prove, to the more intelligent portion of the profession, the possibility of medicating the larynx and trachea by topical remedies; for among those who have employed successfully this method of treating disease, and who have acknowledged its importance, are to be found the names of many of the most eminent practitioners of this and other countries. It has therefore been with many a matter of much surprise, that two of the most distinguished men in Europe,—one of them the hitherto-acknowledged pioneer in this treatment,—should recently, as they have, denied emphatically the possibility of passing a sponge-armed probang into the larynx and trachea, even of the cadaver, much less

into that of the living subject. I refer to Professor Erichsen of London, and Professor Trousseau of Paris!

In a valuable work recently published in London, on the "Science and Art of Surgery," by John Erichsen, Professor of Surgery in University College, and Surgeon to University College Hospital, and which has just been republished in Philadelphia, Professor Erichsen, after alluding in a favorable manner to what American surgeons have accomplished in the topical treatment of diseases of the throat, thus remarks: "Some of its advocates, however, not content with curing in this way disease that is visibly seated in the throat, pretend that the morbid action extends down the trachea into the bronchi, and that it is necessary to follow it in these situations. They accordingly speak of sponging and mopping out those parts of the air tube, and of applying the caustic solution to them, as if this were a proceeding that could be adopted with as little difficulty as passing the sponge into the nares. I cannot believe, however, that this practice, though commonly spoken about, and professedly employed, is ever in reality carried out. Any one acquainted with the physiology of the larynx knows how acutely sensitive it is, and how, in its normal state, it resists the introduction of any foreign body by the most violently spasmodic fits of coughing; and any surgeon who has seen the effects resulting from the fair and complete inhalation of a drop or two of a solution of the nitrate of silver, in a morbid and irritable condition of this tube, must feel sure that no sponge saturated with a solution of this caustic could ever have been thrust down between and beyond the vocal chords. But not only does physiology and ordinary experience tend to disprove the possibility of such a procedure, but repeated experiments, both on the living and on dead subjects, have led me to the conclusion that it is utterly impossible to pass a whalebone, whether curved or straight, armed with a sponge, beyond or even between the true vocal chords. I have frequently endeavored to do this in cases of cut-throat, in which, the air-tube having been laid open, the passage of the sponge could readily have been observed, and in which the facility of doing so would have been greatly increased by the larynx being no longer subservient to respiration, but in no one instance have I succeeded in passing the sponge so as to make it appear at the external wound. In the dead-house,

also, I have repeatedly endeavored to pass the curved whalebone tipped with sponge into the trachea, but have never yet succeeded in doing so by employing those manipulations which could alone be practised on the living subject, or indeed by any ordinary degree of force.

"From the repeated observations I have made upon this point, I have no hesitation in expressing my conviction that the sponge has never been passed, in the living subject, beyond the true vocal chords; though I believe it is possible that, in some instances, and, with the requisite dexterity, it may for a moment be introduced between the lips of the glottis, so as to apply the solution freely to those parts, not, however, without inducing the most intense and spasmodically suffocating cough. I have little doubt, that in those cases in which the sponge has been supposed to have been passed between and beyond the vocal chords, and in which the operator speaks of having felt the constriction exercised by these in its entry and exit, it has, in reality, not entered the larynx at all, but has been passed behind this tube into the œsophagus, the constriction being produced by its passage beyond the projection of the thyroid and cricoid cartilages, and that the caustic solution has been applied to the mucous membrane in this situation, instead of to that lining the interior of the air-passages."*

Prof. Trousseau of Paris, also, not only renounces in favor of Bretonneau all claim to priority in medicating the larynx, but in his clinics he declares that the passage of the sponge-probang into the larynx, either in the living or dead subject, *cannot be accomplished*. With regard to the former subject, I will give Prof. Trousseau's disclaimer, in his own words, contained in a letter to myself, received a few months ago. After alluding to another subject, Prof. Trousseau thus remarks:

"I begin by asserting that never, either before or since the publication of your labors, have I attempted to introduce into the larynx, or into the trachea, a sponge saturated with a caustic solution. I have done it several times *after tracheotomy*, but never without having previously performed that operation.

* The Science and Art of Surgery. By John Erichsen, Professor of Surgery in University College, and Surgeon to University College Hospital. London, 1853. pp. 694-5.

"Now, I shall endeavor to indicate the part that my preceptor, M. Brettonneau, and myself have taken in reference to *topical medication*, applied to diseases of the larynx.

"M. Brettonneau, as early as the year 1818, carried over the aryteno-epiglottic ligaments, several times a day, a sponge fastened to the extremity of a piece of whalebone, and charged either with pure chlorohydric acid or with a saturated solution of nitrate of silver. He expressed (the fluid from) the sponge at the entrance to the larynx, and the patient in the convulsive movements of respiration caused a certain quantity of the caustic solution to enter therein. He also caused vapors of chlorohydric gas to be inhaled. He did this in the treatment of croup.

"When he performed the operation of tracheotomy, in the last stage of croup, he carried with a small sponge a caustic solution into the trachea, and into the larynx, and penetrated into the trachea by the wound he had made. You will find all these details set forth in the *Traité de la Diphthérie*, published at Paris by M. Brettonneau, in 1826.

"M. Brettonneau, with an immense and deserved reputation, practised, and still practices, at Tours on a small field. I, his pupil, have been able in Paris to repeat his experiments on a far greater scale, and my labors in the treatment of croup have been published very often in the French and English journals. I need not at all refer to them in this place; they were merely the practice of my old and illustrious master.

"But in 1830, I had for the first time occasion to treat chronic diseases of the larynx, by caustic applications made to the superior portion of the organ, that is to say, to the aryteno-epiglottic ligaments. I made use precisely of the process which I have pointed out above in the treatment of croup, and I endeavored to express the caustic solution into the cavity of the larynx.

"The first two observations which I published on this mode of treatment can be found set forth in a well-known French journal, the *Bulletin de Thérapeutique*. You will find them in the first volume, published in 1831, pages 163 and 276.

"I continued these labors on the diseases of the larynx up to 1835, the period at which Dr. Belloc and I sent to the Academy of Medicine a treatise on *laryngeal phthisis* and *chronic diseases of the larynx*—a work which obtained the grand prize

the following year, and was afterwards published in the form with which you are acquainted.

"And, consequently, the direct introduction of the sponge, saturated with a caustic solution, into the larynx, and into the bronchial tubes, does not belong to me in any respect whatever; and even at the present time I content myself with expressing the caustic at the entrance of the larynx, or with causing powders or vapors to be inhaled.

"Accept, sir, and honorable confrère, the assurance of my high esteem.

A. TROUSSEAU,

Professor of Medical Clinique of the Faculty of Medicine of Paris."

Although Professor Trousseau here avers, that he has never cauterized the larynx and trachea himself, except through the opening made in the operation for tracheotomy, yet he does not in this communication declare that the operation cannot be performed.

Since this letter was written, however, he has, at the Hotel Dieu, in the presence of several medical gentlemen, expressed his conviction that the passage of a sponge-armed probang into the larynx cannot be effected.

The opinions of such men as Erichsen and Trousseau, on any question connected with medicine or surgery, must necessarily, I am fully aware, have great influence with the profession of both hemispheres. Their opinion on this subject, thus deliberately and emphatically given, is not to be ignored. It therefore seems to have become necessary either to relinquish our claim to this operation, or, by instituting a series of experiments, to prove, unanswerably, its easy and positive performance.

That great good may be accomplished by the topical application of a solution of nitrate of silver to these parts, when diseased, is not denied by these gentlemen. On the contrary, Professor Erichsen declares, that "the treatment of these various chronic inflammations of the pharynx and larynx requires to be conducted by the topical application of the nitrate of silver, which may be looked upon almost as a specific in these diseases;"* but he denies the possibility of applying the sponge to the parts below the vocal chords. On the other hand, we claim that this method of medicating the larynx and tra-

* Op. Citat. p. 694.

chea is accomplished with much ease, and, ordinarily, with great certainty; and that, by this means, diseases of these organs, which would otherwise have proved mortal, have been repeatedly arrested.

We claim, and positively aver, what is susceptible of proof, that the sponge-probang, which Professor Erichsen declares with as much positiveness, "has never been passed, in the living subject, beyond the true vocal chords," has been, in a thousand instances, "thrust down" between and beyond these chords, and has been carried not only through the trachea and its bifurcations, but at different times, and in the presence of more than five hundred different medical men, has been passed, at will, into the right or left bronchial divisions!

I shall now give the proof, not only of the practicability of this operation, which has been so positively denied, but of our ability, as Americans, to accomplish still more than this for the treatment of thoracic diseases; to perform operations of which the conservative Englishmen and skeptical Frenchmen have never dreamed!

When Dr. Marshall Hall came to this country, he held and expressed the same opinion that Erichsen now entertains with regard to this operation; for, when assured by Dr. Brainard of its practicability, he declared that "the passage of a sponge wet with the caustic solution into the larynx and trachea, as proposed, would prove fatal to animal life," and yet, Dr. Hall was willing to see the attempt made, for he visited my office for this purpose, where he had an opportunity of witnessing its accomplishment in many instances, and it was he who suggested the employment of a tube, that the truth of its positive introduction into the larynx might be established, as it would be should the passage of the air be effected through the tube when in this position. After learning, therefore, these views of Professors Erichsen and Trousseau, I procured several of Hutchings' flexible tubes, of different sizes, and to the extremity of one of these, which is thirteen inches in length, I attached a sponge of the same size with those which are used with the ordinary throat probang.

At this time I had under treatment many patients having disease of the air-passages, into whose larynges and trachea I had passed (as I believed) the sponge-armed probang in many instances. But, as other proof besides my own opinion and

belief was necessary to establish this, in the estimation of many, I selected one of these patients, an intelligent clergyman from Canada, and wetting the sponge at the extremity of the flexible tube in a strong solution of nitrate of silver, I passed it down to the vocal chords, through the rima-glottidis (as I supposed), and several inches into the trachea; then withdrawing the wire from the tube, I directed the patient to close his lips and blow, and breathe through the tube. This he did for several moments, filling and emptying the chest of air repeatedly. A lighted lamp was then brought, and this he extinguished promptly, several times, by *blowing through the tube!* This experiment was performed on the 5th of October, in the presence of several physicians.

But as it was intimated by one of the medical men present that it might be averred, by those skeptical on this subject, that the light was extinguished by the air passing through the nostrils, or by the side of the tube, another patient was selected for repeating the experiment. This gentleman was the Rev. Mr. McAnn, the superior third of whose epiglottis could be seen easily by depressing the tongue. Upon the laryngeal face of this cartilage, the extremity of the tube was placed and introduced readily through the chink of the glottis into the trachea. This operation was also performed in the presence of several physicians, among whom were Dr. Sims, Prof. E. H. Parker, and several others. The instrument being thus introduced, one of the physicians closed the anterior nares of the patient, and the light was again extinguished by the expired air through the tube. A large pasteboard card, perforated in the centre, and of sufficient size to screen the nose and mouth completely, was then slipped over the tube, to which it fitted closely, and the patient directed to blow out the light, which was accomplished through the tube as promptly as in the first instance. After all this, Mr. McAnn was requested to expand the chest, by breathing through the instrument. This was several times performed—the patient inhaling and exhaling easily and freely through the inserted tube. These experiments were subsequently repeated on some eight or ten patients, always with the same results, and in each instance in the presence of several medical men. Among those physicians who were present on one occasion or another, I may mention the names of my colleagues, Professors Barker, Davis, Peaslee and Parker

Dr. Bowditch of Boston, Professor Davis of the University of Virginia, Crawcour of New Orleans, Smith of Galveston, formerly surgeon in the army of Mexico, Rose of Indiana, Patterson of Ohio, Sims, Sayre and Minor of New York, and more than forty other physicians of this and other cities, every one of whom expressed himself satisfied with the success of the experiments, as proving the introduction of the instrument "between and beyond the true vocal chords" into the trachea of the patients. In order to test, still further, the truth of the operation, a small air-tight, elastic bag was tied over the upper extremity of the tube, and on introducing the instrument, six or eight inches into the trachea of a gentleman, this little bag was inflated and collapsed a dozen times, by the acts of inspiration and expiration on the part of the patient. In performing this last experiment, an incident occurred (which, had the tube been shorter, might have proved an accident), that is an additional proof of the position of the instrument. The tube which, as I have stated, is thirteen inches long, was introduced its whole length, so that the upper extremity was flush with the lips of the patient, the elastic bag, which is three inches long, only remaining out of his mouth. After the patient had filled and emptied the sac several times, I let go, for a moment, my thumb and finger hold of the extremity of the tube. Just then the patient made a strong inspiration, when the whole instrument, sac and all, was drawn suddenly in, and for a moment disappeared out of sight. Thrusting my fingers immediately into the throat of the patient, I could barely reach, at the base of the tongue, the upper extremity of the bag, which I seized with my thumb, and finger and drew the whole out together.

Other experiments, confirmatory of the above, were instituted, such, for example, as the suspension by a thread of a small ball of floss before the mouth of the tube, which was alternately drawn into and expelled from the opening, by the act of respiration.

The above series of experiments were considered conclusive, by those who observed them, in proving that the operation of passing the sponge-probang into the larynx and trachea, as we have claimed, is positively being accomplished, and we submit to the members of the profession, whether the dogmatic assertions of Professor Erichsen, that "the sponge has never been

passed, in the living subject, beyond the true vocal chords," and that the operation "is utterly impossible," has not been by these experiments disproved?

But we have declared it to be possible to do still more, for the treatment of thoracic disease, than can be effected by this operation, though its practicability be fully admitted. After accomplishing what has already been described—namely, that of introducing the elastic tube into the bronchial divisions, for it must have passed several inches into these, if it entered the trachea—these questions occurred to my mind: What shall now hinder the introduction of medicinal agents, through this tube, into the lungs, or directly into the bronchi and their terminations? What will prevent the injecting, even of a vomica, under favorable circumstances, with appropriate remedies?

Having under treatment, daily, patients laboring under, not only chronic bronchial disease, but those affected with tuberculosis, in almost every stage of the disorder, I determined to test the effect of a solution of nitrate of silver, applied directly and freely to the bronchi in disease of their membrane; also in disease of the lungs, to inject, if possible, the same solution into tubercular excavations.

The first trial of this nature was made on the 13th of Oct. 1854. It is unnecessary to give the previous history of this case, in which the operations of *catheterism of the air-passages* was first performed.

The patient, a lady from Connecticut, thirty-two years of age, is in the advanced stage of tubercular consumption; a large cavity exists in the apex of the left lung, and a deposition of tubercles is present in the right. All the physical signs of both these conditions are present; my own opinion has been confirmed by the examination and opinions of several good auscultators. She has had, for several weeks past, the treatment, both topical and general, ordinarily employed in the management of such cases. Once in two or three days, the larynx and trachea have been cauterized, and the iodide of potassium, with both vegetable and mineral tonics, have been administered, and with considerable benefit. But still, the signs of advanced tuberculosis are present. The cough and free expectoration of purulent matter continue.

Oct. 13th.—To-day, instead of using the sponge-probang, I

passed No. 12 of Hutchings' elastic tubes (which is thirteen inches long) through the trachea, and into the left bronchial division. Through this tube, with a small glass syringe, I injected one drachm of a solution of nitrate of silver, of the strength of forty grains to the ounce of water, into the lung. No cough whatever, or any sense of suffocation, was produced by this operation, nor did the patient observe in the least the ordinary bitter taste of the solution. A few minutes after the operation she stated that she "felt a warm sensation" in the upper portion of the left lung, but no pain, or any unpleasant feeling whatever, followed the operation. Mrs. A. did not return to have the operation repeated until the 17th, four days afterwards, when she stated that for twenty-four hours after the use of the injecting tube, her cough and expectoration were both greatly diminished, that she had breathed with more freedom than before; that these favorable symptoms had continued, though not as marked as at first, up to the present time. She was therefore much disposed to have the operation repeated. The tube was again introduced through the trachea its entire length, and at this time one and a half fluid drachms of the solution were thrown into the lungs. The immediate results were the same as at first, but after some minutes, she began to cough, and expectorated easily, and at once, nearly two ounces of purulent matter, changed in its color and consistence, apparently, by its immediate contact with the argentine solution. Indeed, the expectorated matter presented precisely the appearance which is observed to take place with the purulent matter of an external ulcer when cauterized with the nitrate of silver. This changed condition of the expectoration was observed by several physicians who were present when the operation was performed. The relief which followed this last operation in Mrs. A's. case was still more marked and decided than in the first instance. Her cough she stated was much relieved, the expectoration yet more diminished, and her breathing was easier. A pain in the chest of which she had complained was removed; and during the two nights which followed the operation her sleep was better than it had been for a long period before. Mrs. A. remained until the 26th, during which time the elastic tube was introduced into the left bronchial division seven times, and on each occasion from one and a half to two drachms of a strong solution of the nitrate

of silver were injected into the lungs. Her improvement was constant. She grew stronger, and gained flesh in this period; but, being obliged at this time to return to her home, she left with the intention of coming back to renew the treatment, in a few weeks.

The same day on which I succeeded in introducing medication into the air-tubes of the above patient, I commenced in like manner the treatment of other cases, and since the thirteenth day of October, there have been treated for a longer or a shorter period, thirty-two patients laboring under tubercular or bronchial diseases, by the direct introduction into the lungs of a strong solution of the nitrate of silver injected through the elastic tube. Of these thirty-two cases, nineteen showed unequivocal physical signs and symptoms of tuberculosis in the different stages of the disease; complicated, many of them, with bronchial inflammation. Thirteen of the number are cases of chronic bronchitis, the disease in some of them being of many years' standing. Of the nineteen cases of tuberculosis, nine of the number presented, on auscultation, the usual signs of the presence of tubercular cavities in one or both lungs. All these cases of thoracic disease, with one or two exceptions, appear to be benefitted, some of them greatly, by this method of topical treatment.

Although a rigid and circumstantial history of these cases, and of their treatment, is being kept by my assistant, Dr. Richards, I shall not detain the reader with a relation of them, but will merely select a few whose history and sanatory condition, on coming under my treatment, were known to other medical men, for all of these cases to which I shall refer were committed to my care by their attending physicians.

The first case of which I shall speak is that of Mrs. A., whom I first saw early in January, 1854, in consultation with a distinguished physician of this city, Dr. John W. Francis. She had suffered from chronic bronchial disease for several years; but her symptoms, from taking cold, had been greatly aggravated some few months before this consultation, and on examination at this time, there were revealed signs of extensive bronchial disease, with tubercular deposition in the apex of the right lung. Marked dullness, on percussion, was found under the clavicle on the right side, with crepitating mucous râles and prolonged expiration, indicating the commencement of tubercular soften-

ing ; on the left side puerile respiration, with coarse mucous râles over the whole chest. The disease seemed to have been preceded, or attended, by follicular disease of the pharynx ; for the mucous crypts of the pharyngeal membrane were destroyed, and the right tonsil had become completely atrophied. Mrs. A. was feeble and much emaciated, had a severe cough with large muco-purulent expectoration. After continuing the treatment of the patient for some time, in consultation with her attending physician, at his request I consented to take charge of the case, on condition that the patient should visit me at my rooms.

In addition to the ordinary general treatment, which it is not necessary to particularize, topical applications of the nitrate of silver to the pharyngo-laryngeal membrane were employed. These cauterizations were continued, at first, three or four times a week, and subsequently twice a week, during the remainder of the Winter and the following Spring. No diminution of the cough or expectoration occurred until the local treatment had been continued for several weeks. Gradually both improved ; Mrs. A. gained in strength and flesh, so that when she left the city in June, to spend the warm season in the country, she had gained several pounds in weight, and, although the cough and expectoration still continued, both were greatly diminished. No marked change in the patient's symptoms occurred during the Summer, but soon after her return to the city, at the close of the season, her pulmonary symptoms, from taking cold, or from some other cause, were aggravated, and her cough and expectoration were again increased. The treatment was renewed. Applications of the nitrate of silver were made to the larynx and trachea, which at once diminished, as before, the urgency of the symptoms. On the 25th of October, I introduced the flexible tube through the trachea, and conveying it down the right bronchial division, injected one and a half drachms of the argentine solution, of the strength of forty grains to the ounce of water, into that side. As in the first instance described, the irritation was much less than when the sponge-probang is used. Indeed, no cough or disturbance in any degree followed this operation. The effect on the prominent symptoms of the patient was very favorable. For twenty-four hours afterwards, the cough and expectoration were greatly diminished ; nor did tightness of

the chest, or any uneasiness whatever, follow the suppression of the discharge. On the contrary, the patient experienced so much relief during the subsequent week, that she did not return until the first of November (one week afterwards) to have the operation repeated. On this day two drachms of the fluid were introduced; and thrice since, making five times in all, has the same operation been performed. Mrs. A. has continued constantly to improve, and notwithstanding the unfavorable season of the year, has certainly gained more in the last six weeks, than during several months before. But what the ultimate result will be, it is of course impossible to pronounce. Of one thing we are positive, that Mrs. A. is in much better health now than she was nearly a twelvemonth ago, at which time she exhibited unmistakable signs of tubercular exudation, complicated with general bronchial disease.

Some months ago, General P. of Niagara, having just returned from Europe, called on me with an invalid sister, bringing with them a letter from Professor Trousseau, of Paris, under whose treatment Miss P. had been, containing his full opinion of her case, and commending her to my care. The following is an abstract of the letter of Trousseau: "Miss P., whom I have examined with great attention, will hand you the consultation which I have given her. I think she has pulmonary emphysema, with chronic bronchitis, but I have not been able to find any of the signs of tubercular affection."

An attentive examination of this lady's case confirmed the opinion given by M. Trousseau. Extensive bronchial disease existed, with pulmonary emphysema—a complication which, I believe, is almost always more or less present in serious and prolonged bronchitis.

No treatment was adopted at this time, as Miss P. was on her way home, but she proposed to return in a few weeks, and have the treatment I had advised employed. But I saw nothing more of this lady until the 15th of last October, when her brother came with her to New York, and placed her under my care. Her case now presented symptoms more unfavorable than when I first saw her. She was emaciated and feeble; was harassed by an incessant cough, and had a most profuse mucopurulent expectoration. Auscultation now revealed, not only extensive chronic bronchitis, and pulmonary emphysema, but bronchial dilatation. In addition to an almost constant bron-

chial cough, she was subject, daily, to paroxysmal attacks of spasmodic cough, so severe, at times, as nearly to suffocate her. The local treatment, conjoined with appropriate general remedies, was adopted in Miss P.'s case. The applications of a solution of nitrate of silver were made daily, first to the pharynx, and then into the larynx and trachea. Improvement, in her case, began, as it almost always does in bronchial disease, as soon as the small amount of caustic fluid, which the sponge will take up, had been introduced a few times into the larynx and trachea. On the 4th of November I employed, for the first time, in her case, the tube and syringe, and injected, on this occasion, two drachms of the caustic solution into the bronchial divisions. The effect of this irrigation of the pulmonary mucous membrane, was, as the patient herself remarked, "perfectly astonishing." The cough and expectoration were both greatly relieved, the oppressive sensation about the chest, long complained of by the patient, was abated, and on her return to the office, three days after, she manifested improvement in every symptom.

The injections have been repeated every day and every other day up to the present time, and Miss P.'s improvement has been going on constantly. She is now much stronger; coughs less; has gained flesh in the last three weeks, and has exchanged her pale, sickly look, for one indicative of returning health. To-day, November the 28th, I injected, for the sixteenth time, in her case, in the presence of Professor Davis, of the University of Virginia, Dr. Minor of Brooklyn, and several other medical gentlemen, two drachms of a solution of the nitrate, of the strength of two scruples of the salt to the ounce of water, without producing the slightest cough, or any irritation whatever.

Of the thirty-two instances mentioned, of tubercular disease, it would not be difficult to select a dozen cases, from among those who have been the longest under this form of treatment, which have manifested signs of improvement as extensive, and decided, as have those cases to which we have referred. I shall, however, only allude briefly to one of these, the character and treatment of which has been observed, with much interest, by several medical gentlemen.

On the 21st of September, Dr. Varick of Poughkeepsie, placed under my care a young lady from that town, who for several years had been afflicted with chronic bronchitis of a

grave character. The disease began four years ago ; commencing in the form of a follicular inflammation of the pharyngeal membrane, and extended by continuity to the mucous membrane of the larynx and bronchi. The disease was attended with a loss of voice, an almost constant and harassing cough, and a profuse muco-purulent expectoration. Miss V—— presented many of the rational signs of tubercular consumption, but auscultation revealed only mucous and bronchial râles over both lungs, with vesicular emphysema and bronchial dilatation. There were no positive signs of the presence of tubercular exudation, although slight flatness, with prolonged expiration existed on the right side. Dr. Varick had employed, in his treatment of her case, along with general remedies, the topical application of the nitrate of silver ; but as he had not been able to medicate the larynx, and the patient was not relieved, he requested me to take charge of the case. I soon succeeded in canterizing the larynx and trachea, both of which were ulcerated, and after continuing the local treatment for two or three weeks, the voice was restored to nearly its normal condition, but the cough was not materially relieved, nor was the profuse bronchial expectoration in any degree diminished. A deep seated dull pain, under the sternum, which had long continued, and which had resisted the effects of counter-irritation, and other measures, still remained.

On the third of November, in the presence of several medical gentlemen, I passed the tube through the larynx and trachea, down to the bifurcation and injected into the bronchial divisions, two drachms of a strong solution of the nitrate of silver. From this hour, her troublesome symptoms began to improve, the cough which heretofore had vexed her night and day was arrested completely, for a period of twenty-four hours, after this first operation ; and what was equally surprising, the pain under the sternum, which had been so persistent, ceased altogether, and has not since returned.

On the second day, she coughed again, but moderately, and expectorated with more ease than before. The injection was repeated on the 6th of November, and again on the 8th, and was attended, apparently, with continued advantage to the patient. The effect of the remedy was so prompt and decided in checking the profuse expectoration, that some fears were entertained by me, in this case, as well as in that of Miss P——, tha

unfavorable symptoms might follow the sudden suppression of such long continued and habitual drains. But in neither of these cases, nor in any one of those similarly affected and treated, have I observed any dyspnoea or oppression of the chest whatever, to follow the diminished expectoration.

Inasmuch, therefore, as the effect of the treatment in Miss V.'s case continued to be decidedly favorable, the operations were repeated every few days, throughout the month of November. During this time, she had added about ten pounds to her weight; her cough was nearly gone, her voice restored to its normal condition; and, as her whole appearance and symptoms were indicative of returning health, she was, on the first day of December, dismissed from further topical treatment.

In the treatment of the various chronic inflammations of the bronchi, I have been accustomed, for many years, to depend upon the topical application of a solution of nitrate of silver to the mucous membranes of these parts, and so uniformly has success followed its employment, that, as Erichsen has said of its effects on the pharyngo-laryngeal surface, I can affirm, that in my hands it has proved almost a specific in these diseases. Others who have given the remedy a fair trial, have borne the same testimony in its favor. Dr. Allison, of London, who has published an interesting brochure on the "Medication of the Larynx and Trachea," says: "In chronic inflammation of the larynx and of the upper portion of the trachea, the solution of the nitrate of silver has, in my hands, as in others, been very useful in bringing the disorder to a conclusion, and where that has not been accomplished by reason of its dependence upon incurable disease of the lungs, it has almost invariably afforded very considerable relief, by rendering the cough less frequent and violent, and removing much of the tickling and uneasy sensations at the upper portion of the larynx. In this form of disease the treatment is particularly suitable, whether it be simple or of a specific character. * * * * *

"In some cases of disease of the larynx and trachea, in which the symptoms inclined to the suspicion that ulceration existed, the same local application of nitrate of silver has been very useful. Old bronchial affections have in a large majority of cases been similarly benefitted."*

* The Medication of the Larynx and Trachea. By Scott Allison, M. D. pp. 7-8. London, &c.

Professor Bennett, of Edinburgh, in his recent work on Tuberculosis, thus speaks of the effects of this local remedy: "The action of the nitrate of silver solution is not that of a stimulant, but rather that of a calmative or sedative. It acts chemically on the mucus, pus, or other albuminous fluids it comes in contact with, throws down a copious white precipitate, in the form of a molecular membrane, which defends for a time the tender mucous surface or irritable ulcer, and leaves the passage free for the acts of respiration. Hence the feeling of relief almost always occasioned; that diminution of irritability in the parts, which is so favorable to cure, and why it is that strong solutions of the salt are more efficacious than weak ones.

"It may be easily conceived that such good effects must be more or less advantageous in almost all the diseases that affect parts so sensitive, from whatever cause they may arise; and that this treatment is not adapted to one or more diseases of the larynx, but, like all important remedies, meets a general indication which the judicious practitioner will know how to avail himself of."* And he closes a work of great interest with the following "practical conclusions."

"1st. That not unfrequently diseases, entirely seated in the larynx or pharynx are mistaken for pulmonary tuberculosis.

"2d. That even when pulmonary tuberculosis exists, many of the urgent symptoms are not so much owing to disease in the lung as to the pharyngeal and laryngeal complications.

"3rd. That a local treatment may not only remove or alleviate these complications, but that, in conjunction with general remedies, it tends in a marked manner to induce arrestment of the pulmonary disease."†

Hitherto, in the treatment of bronchial disease, a difficulty has arisen from our inability to introduce, by means of the sponge-probang, a sufficient quantity of the caustic solution into the bronchial divisions; for in passing the instrument into the opening of the glottis, and through the rima of the glottis, much of the fluid is discharged from the sponge before it reaches the tracheal division. On this account I have, in a multitude of instances, when treating bronchial disease, introduced the saturated sponge, several times, at the same sitting, in order to

* The Pathology and Treatment of Tuberculosis. By John Hughes Bennett, M. D., &c. p. 140.

† Ut supra, p. 142.

convey an increased amount of the fluid into the bronchi, and it has frequently happened, that patients observing its effects, have returned in a few days requesting that as much of the solution as possible be passed into the wind-pipe, as the cough and expectoration, they have declared, are invariably greatly improved by the operation.

By this method of catheterism of the larynx and trachea, the solution is not only conveyed with more certainty and directness to the bronchial, mucous surfaces, but any amount of the medicament may, in this way, be introduced. What quantity of the solution may be the appropriate amount to be employed, in any given case; of what strength; how often to be repeated; or how long to be continued—are important questions, to be solved by future experience, and by repeated observations.

Of one interesting fact we are now fully assured, that whenever the remedy has been freely employed in the treatment of bronchial disease, the effects have been invariably salutary. Catheterism of the larynx and trachea has now been employed in my hands, in the treatment of more than twenty cases of chronic bronchitis—some of them of a very severe and protracted nature, in which from one to three drachms of a solution of nitrate of silver, of the strength of from thirty to forty grains to the ounce, have been injected every few days, in each case, through the trachea, into the bronchi; and in every instance, with not a single exception, improvement has followed the treatment. In those cases where tubercles exist, whether the exudation be in a crude state, or beginning to soften, the beneficial effects of the treatment have been, thus far, as uniform and certain, although the improvement has not been as rapid in these, as in the former cases. Most of these cases of tubercular disease are still under treatment, and the final result cannot be foretold.

In the employment of catheterism of the bronchi, by means of the flexible tube and the syringe, repeated proofs have occurred of the presence of this tube in the trachea. The coughing of the patient before the injecting was completed, has often driven a portion of the solution, with force, through the tube, and to a distance of several feet from the patient. Several distinguished auscultators, who have been present when the operation was performed, have had the curiosity to examine the chest of the patients, both immediately before and after the operation, when they have detected readily, by auscultation, the presence

of the fluid in the lungs, immediately after the injection was made.

Of more than fifty medical men, comprising many distinguished physicians of our country, who, from time to time, have been present at these operations, all, *with one or two exceptions*, have been fully satisfied that these injections were, in reality, made, not into the œsophageal tube, but into the tracheal and bronchial divisions.

Among the patients who have been the subjects of this treatment, is Dr. Pittard, an intelligent and experienced physician from North Carolina, who came to this city to be treated for a severe and long continued bronchial disease. The following is Dr. Pittard's testimony on this subject :

"In compliance with your request, I give you a simple statement of the effect of an injection into my lungs of the nitrate of silver. The application of the remedy caused a considerable glow through the chest, which was felt for several hours. There was no irritation produced on the bronchial membrane, by the introduction of the fluid ; but, on the contrary, the cough was suspended, or greatly moderated for a day or two.

"It may be said that the injection passed into the stomach, instead of the lungs. This may have been possible in some other instances, but in my case there could be no doubt of its having entered the air-passages, for you will recollect that the breath was passed out through the tube, as soon as it was inserted, which may be considered conclusive evidence, besides, I tasted the nitrate of silver, in the matter expectorated for twelve or fifteen hours after the administration of the remedy.

"Very Respectfully,

"JNO. PITTARD, M. D."

In conclusion, it is here maintained, that the direct medication of the lungs, by means of catheterism of the air-tubes, an operation I believe not before performed, has been repeatedly accomplished—that the operation may be performed by the dexterous surgeon with ease and facility, and with perfect safety to the patient, and that the results of this method of treating disease, whether it has been employed in bronchial affections, or in the commencement of tuberculosis, have already afforded the most gratifying indications that practical medicine will be greatly advanced by this discovery.

James R. O'Keefe M.D.

REMARKS
ON
CROUP AND ITS TREATMENT,
BY HORACE GREEN, M. D.

THE extent of the fatal cases of croup which have occurred among children, in the city of New York, during the last year, is almost without a parallel in the history of this affection.

The whole number of the fatal cases of this disease which, according to a statement furnished by the City Inspector, occurred in New York during the year ending February 28th, 1854, was *six hundred and eighty*! The subjoined table contains a statement of the number of deaths from croup, in each of the months of the above-mentioned year; and, also, columns to exhibit the relative proportion of males and females out of the six hundred and eighty fatal cases.

	Males.	Females.	Total.		Males.	Females.	Total.
1853. March.....	34	36	70	1853. October.....	38	43	81
“ April.....	29	26	55	“ November.....	31	39	70
“ May.....	27	22	49	“ December.....	47	42	89
“ June.....	28	14	42	1854. January.....	28	39	67
“ July.....	13	15	28	“ February.....	33	28	61
“ August.....	21	11	32				
“ September.....	15	21	36		344	336	680

Undoubtedly, this disease, like many others, is influenced by atmospheric peculiarities, so as to assume, occasionally, an epidemic character, and, in certain seasons, to exhibit a great increase in its prevalence. As the various forms of angina have been more or less aggravated during the past season, it is not improbable that atmospheric peculiarities have also served to increase the frequency of croup.

We have no means of comparing the preceding statement of the fatal cases of croup, with the statistics of deaths from this disease in other places during the same time; but, on referring to an article published in the London Medical Gazette for 1850* on the subject of croup, we find that, in a population nearly fourfold greater than that of this city,† the average number of deaths from croup, during a period of eight years, in London, was less than three hundred and eighty a year. The number of deaths from croup in the whole State of Massachusetts, in 1851, according to the Registration Report for that year, in a population, at that time, of about one million,‡ amounted to four hundred and eleven. During the same year, in Suffolk county (which county includes Boston, Chelsea, &c.), with a population amounting to 145,000, the deaths were ninety-two.

It will be recollected, that at the census of 1850, the population of Kentucky was very near the same in amount with that of Massachusetts.||

It is a little remarkable, diverse as are the climates of these States, that, with a population nearly equal, the number of fatal cases of croup should be so uniform. In 1852, according to the annual Report of the Registration of Births, Marriages, and Deaths, in Kentucky, for the above year, the deaths from croup were four hundred and sixty-one; just fifty more than occurred in Massachusetts during 1851.

In Philadelphia, the mortality from croup, in the five years preceding 1846, was seven hundred and fifty-six; or an average of one hundred and fifty-one a year,§ in a population which, at the census in 1850, amounted to 121,376.

These brief statistics will afford us some idea of the ordinary annual mortality from croup in some of the larger cities, and in different climates, and will exhibit, also, especially in comparison with London, the frightful mortality caused by the disease in New York during the last year.

It is now nearly fifty years since Napoleon issued, from the head-quarters of Finkenstin, his celebrated general order—"d'ouvrir un concours sur la maladie connue sous le nom de croup," and offered a prize for the best essay on the nature of this disease, which served to awaken a new interest on the subject throughout the whole of Europe; and was the occasion of eliciting many learned, elaborate, and highly interesting works on the nature and treatment of this terrible malady. From that time to the

* London Medical Gazette, vol. x., p. 542.

† The number of the inhabitants of London, at the last census, was 2,362,236. In New York, in 1850, is was 515,547.

‡ At the census in 1850, the population of Massachusetts was 994,514. That of Boston proper, 136,881.

|| The population of Kentucky was 985,405.

§ Dr. Meigs on the Diseases of Children, p. 84.

present, these inquiries have been pursued, in this country and in Europe, by eminent medical men, and the results published to the world ; but, has a plan of treatment yet been discovered, recommended, and adopted generally, that has had the effect to abate the severity of the disease, or, in any considerable degree, to lessen its fatality ?

In that excellent treatise on Croup, by Dr. John Ware, of Boston, the author declares, that "the received mode of treating the disease," which is very much the same for all varieties, "has come down to us by a sort of tradition from our predecessors in the profession, and varies but little, if at all, from that which was originally adopted when the disease first became the object of attention. * * * In the main, emetics and bleeding, blisters and calomel, have been the principal remedies. The depleting, reducing, and perturbing method is that upon which dependence has been chiefly placed."*

This is, indeed, true, for it must be admitted that, whilst in the management of many other diseases great improvements have been made during the last half-century, in the traditionary treatment of this affection no modifications have been generally adopted which have served to diminish, in any amount, the number of fatal cases. On the contrary, the disease is admitted, by the best and most recent authorities, to be not only progressively on the increase, but, so far uncontrolled by the ordinary therapeutic measures, as to prove fatal in nearly one half of the whole number of those who are the subjects of this affection.†

These unfortunate results, which, in the statistical records of croup, have followed the ordinary mode of treatment, will be found to have been in no degree more favorable in the history of the disease as it has occurred in our city during the past winter ; and we do not hesitate to avow our firm conviction, that the employment of the reducing and perturbing plan of treatment, a plan recently recommended by more than one eminent writer, and still employed by many practitioners, has destroyed more lives, among young children, altogether, than it has been instrumental in saving. A work, by an eminent English writer, has recently been republished in this country, which has met with a very favorable reception from the profession generally, and has received the commendation of the reviewers, in our medical journals ; and yet, the method urged by the author, in his "Lectures on the Diseases of Infancy and Childhood,"‡ as the appropriate plan for the management of membranous croup, if fully carried out in the treatment of the disease, would prove fatal in its results, as we conscientiously

* Boston Medical and Surgical Journal, vol. xlii., p. 261.

† *Traité du Croup*, par M. Double, p. 479.

‡ *Treatise on the Diseases of Infancy and Childhood*, by Chas. West, M. D.

believe it has done, in more instances than it has proved remedial. That we may not be misunderstood in our remarks on this heroic plan of treatment recommended by Dr. West, and employed, to a great extent, by many practitioners in this country, we shall take the liberty of giving a brief statement of the therapeutic measures by him adopted.

In cases where an attack of croup "is merely apprehended, but where catarrh exists, attended with a slight, ringing cough," Dr. West recommends that the child "be confined to the bed-room, be placed on a spare diet, and should take an emetic of ipecacuanha and antimony, to be followed by some mild diaphoretic medicine containing small doses of antimonial wine."*

But, should the disease have attained its full development, before the patient comes under the notice of the physician; or, should its access be violent, a far more energetic plan of treatment is advised by Dr. West. "The abstraction of blood, and the administration of tartar emetic, are the two measures on which your main reliance must be placed; and you must bleed largely, and give tartar emetic freely, remembering that if relief do not come soon it will not come at all—that there is not danger only, but death in delay. I have never met with an exception to the rule which prescribes the free abstraction of blood in every case of severe idiopathic croup, when seen at an early period, and before the purple lips, and livid countenance, and failing pulse, announce the long continuance of a serious obstacle to the free admission of air into the lungs. Even in very young children local depletion forms, in these cases, but a poor substitute for general bleeding; for it is not merely the abstraction of a certain quantity of blood that is needed, but its removal in such a manner as most speedily to produce an effect on the system. Bleeding from the jugular vein is preferable, under these circumstances, to venesection in the arm, since the latter often fails in children under three years old; and the blood never flows so freely as when taken from the jugular vein."†

After bleeding "largely" from the arm,—or, what Dr. West considers preferable, "in very young children," from the jugular vein, *because*, in children under three years of age, "the blood flows more freely when taken from the jugular vein,"—the free administration of tartar emetic is recommended. To accomplish any real good by means of this medicine, "it must be given," says Dr. West, "in doses of an eighth, a quarter, or half a grain, every ten minutes, until vomiting is produced; and the same doses should afterwards be continued every half hour, until decided and permanent relief has been afforded." If the medicine, when administered in

* Diseases of Infancy and Childhood, by Chas. West, M. D., p. 221, Philadelphia edition.

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In 1848, the writer published a small treatise, "On the Pathology of Croup, and its Treatment by Topical Medications," in which the declaration was made that, "the practice of making topical application of medicinal agents into the larynges of young children, for the treatment of membranous croup, is a plan entirely practicable, safe, and, when judiciously employed, *in the highest degree efficacious*." This method of treating a disease hitherto so unmanageable, was founded upon the following propositions, which were then advanced, with regard to the pathology of the disease, namely: That the essential characteristics of true croup "consist in an inflammation of the secreting surfaces of the fauces, larynx, and trachea, which is always productive of a membranaceous or an albuminous exudation.

2. "That the membranaceous concretion, which is found coating the inflamed mucous surface of the parts in croup, is an exudation,—not from the membrane itself, but is secreted by the muciferous glands, which so abundantly stud the larynx and trachea.

3. "That the exudative inflammation commences, invariably, in the superior portion of the respiratory passages, and extends from above downwards,—never in the opposite direction."

Since the publication of the work in which this mode of treatment is advocated, the author has had the opportunity of treating many cases of croup on the plan deduced from this view of its pathology; viz., by means of topical medication,—not only in his own practice but in the practice of, and in conjunction with, other members of the medical profession; and with an amount of success that has afforded a high degree of encouragement and satisfaction.

He has also received from medical men, in different parts of the United States, as well as from numbers in Europe, the history of many cases of membranous croup, wherein topical measures, in their hands, have proved effectual in arresting the disease. In view of the great fatality, on the one hand, which constantly attends this disease, as ordinarily treated, and on the other, of the prejudice against the local treatment, which is still entertained by many, especially of the older members of the profession, the author does not feel at liberty to withhold from his professional brethren this abundant and most conclusive testimony in favor of topical medication in the treatment of croup.

It will not avail, for the cavilling opposer of this method of treating the disease, to rebut all testimony in its favor, as many in the profession, who, having always refused to try the plan, have persisted in doing,* with

* In a case of membranous croup that occurred in this city, the history of which was received from the attending physician, a prominent surgeon was called, by re-

adopted, this opinion of its effects will be entirely sustained by the results which have followed its employment.

A similar method, though in some degree less heroic, is advocated by Dr. Meigs, of Philadelphia, in his recent work on "The Diseases of Children."* In a "summary of the treatment," Dr. Meigs suggests "the following plan of treatment to be pursued in children about or over two years old, when we are called in good time: to take from the arm three or four ounces of blood, once, twice, or three times in two days, according to the strength of the child, and the degree and obstinacy of the fever. In both forms of the disease, emetics, and I would recommend alum in preference to any other, should be given once at least, very often twice, and, in violent cases, three or four times in the twenty-four hours, so as to produce vomiting attended with a good deal of effort. To give, at the same time, from one to two grains of calomel, with a quarter or half a grain of Dover's powder, every two hours, taking care not to give a dose for an hour before nor after the time selected for the exhibition of the emetic. In cases in which there is loud stridulous respiration, heard both in the inspiration and expiration, in which previous treatment has had no effect, and in which there is threatening of speedy death, we may give two grains of calomel every hour, until three or four doses have been taken, and direct the exhibition of an alum emetic after the last dose, or resort to tracheotomy."†

Certainly, in one respect, this "plan of treatment" is characterized by a great improvement on the wholly reducing and prostrating method ordinarily adopted;—namely, in substituting alum for antimony as the emetic in the treatment of the disease. His reasons for this are as follows: "Antimony, when resorted to as frequently in the disease as I am of the opinion emetics ought to be, is too violent in its action; it prostrates many children to a dangerous degree, and is, I fear, in some cases, itself one cause of death."‡

If, then, these positions, with regard to the generally-adopted, reducing plan of treating croup, are tenable—and in confirmation of these views we challenge inquiry into its history—is it not time for the thinking, *progressive* portion of the profession to conclude with Dr. Ware, "that the methods of treating this disease in common use, require a careful reconsideration"?

That there is a method of treating croup, which every practitioner may, if he will, adopt, and which, if promptly and appropriately employed, will arrest the disease in a very large proportion of cases, we unhesitatingly aver.

* A Practical Treatise on the Diseases of Children. By J. Forsyth Meigs, M. D., &c., second edition.

† Op. citat, p. 103.

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the assertion, that the cases of croup which have recovered rapidly under local treatment "were not cases of true membranous croup, but those of a spasmodic, or catarrhal nature, such as would have recovered under almost any treatment;" for, in many instances the employment of nitrate of silver, in the treatment of croup, has been adopted with great success, by eminent practitioners, who had, previously, had extensive experience in the management of the disease, but who, before the employment of topical medication, had treated, unsuccessfully, a large number of cases by the ordinary "depressing, depleting, and disturbing remedies." This was the case, as with many others to whom we could refer, with the distinguished Dr. John Ware, of Boston, to whose experience, in the different modes of treating this disease, and the conclusions to which he has arrived, we shall now briefly allude.

It is well known to the reading members of the profession that several years ago Dr. Ware published his "Contributions to the History and Diagnosis of Croup"—a work evincing more scientific research, and containing more information with regard to the true pathology of membranous croup, than all that had been previously written in America. In these papers, Dr. Ware refers to thirty-nine cases of what he denominates membranous croup, which were noticed in his own, or in the practice of his friends. Of these cases the state of the fauces was observed in thirty-three instances, and "in thirty-two a false membrane was present; most frequently, and sometimes only, on the tonsils, sometimes on other parts also, as the palate, uvula, and pharynx. In one case no such membrane was present; but it was found to exist in the larynx after death. These thirty-three cases were treated by the ordinary therapeutic measures; and of the whole number, *three* only recovered—in thirty, the disease proved fatal. It is not at all surprising that, under these circumstances, Dr. Ware, eminent for his careful investigation and conscientious inquiry after truth, should have become "confirmed in the opinion," as he subsequently declares himself to have been, "that the methods of treating this disease, in common use, require a careful reconsideration;" nor that he should have propounded the question,—"*If the mode of treating croup commonly adopted, does no good, are we sure that it does no hurt?*"

quest of the family, in consultation. The case had advanced, until the symptoms were very urgent, and prompt measures were demanded, to save the life of the child. The physician in attendance proposed cauterization of the parts, rather than tracheotomy. The consulting surgeon positively refused to accede to the adoption of this plan, on the ground, that it was a dangerous, and, in such cases, a worthless measure. The physician, however, persisted in his proposal, and the surgeon retired. Cauterization of the larynx was then promptly, and perseveringly employed, and, by this means the life of the child was saved.

Having concluded, after the experience to which we have referred, to treat the disease "without the persevering use of the heroic remedies," Dr. Ware subsequently adopted a method in which "the treatment consisted—

1. "In the absence of all reducing, depleting, and disturbing remedies.
2. "Keeping the patient under the full influence of opium combined with calomel.
3. "Constant external application of warmth and moisture [to the neck], and of mercurial liniment, slightly stimulating.
4. "Constant inhalation of watery vapor."

In March, 1850, Dr. Ware read before the Suffolk District Medical Society "Additional Remarks on the Treatment of Croup," in which paper he refers to five cases of membranous croup, three of which were treated on the method indicated in the preceding propositions. The history of these five cases, as briefly narrated by Dr. Ware, with the conclusions to which he has arrived, we shall take the liberty of giving in his own words.

"The first case was that of a male, four years old, who was taken with membranous sore throat, accompanied by high constitutional irritation, Oct. 14, 1845. No croupy symptoms occurred till Oct. 18, when they were manifested in a perfectly distinct manner. On the 20th and 21st, patches of false membrane, with bloody sputa, were raised—and one piece of four inches in length. The raising of the latter was accompanied by a severe and suffocative paroxysm of coughing. On the 22d he died, eight days from the commencement of the disease and four from the access of croup. The suffering in this case was very considerable, but far less than I have been accustomed to witness in cases of croup treated according to the ordinary method."

"The second was that of a female, four years of age, taken with croup on the 8th of Nov., 1845. No depleting or reducing remedies were employed. Patches of membrane, and one piece of considerable size, were brought up on the 10th, and a few following days. She never suffered much, improved steadily, and on the 15th seemed well in all respects except the voice, so that on the 16th I did not see her. On the 17th there was a return of all the croupy symptoms, including the appearance of lymph upon the tonsils, and she died on the night of the 19th, eleven days after her first seizure. During no part of the disease was the suffering from dyspnœa very intense for any continued period.

"On dissection, the usual appearances were found, and in one lung the false membrane extended for some distance into the bronchi in the substance of the organ."

"The third case was a female, six years of age, who was seized with the disease Oct. 31, 1847. The onset of the disease was gradual, yet quite dis-

of the fluid in the lungs, immediately after the injection was made.

Of more than fifty medical men, comprising many distinguished physicians of our country, who, from time to time, have been present at these operations, all, *with one or two exceptions*, have been fully satisfied that these injections were, in reality, made, not into the œsophageal tube, but into the tracheal and bronchial divisions.

Among the patients who have been the subjects of this treatment, is Dr. Pittard, an intelligent and experienced physician from North Carolina, who came to this city to be treated for a severe and long continued bronchial disease. The following is Dr. Pittard's testimony on this subject :

"In compliance with your request, I give you a simple statement of the effect of an injection into my lungs of the nitrate of silver. The application of the remedy caused a considerable glow through the chest, which was felt for several hours. There was no irritation produced on the bronchial membrane, by the introduction of the fluid ; but, on the contrary, the cough was suspended, or greatly moderated for a day or two.

"It may be said that the injection passed into the stomach, instead of the lungs. This may have been possible in some other instances, but in my case there could be no doubt of its having entered the air-passages, for you will recollect that the breath was passed out through the tube, as soon as it was inserted, which may be considered conclusive evidence, besides, I tasted the nitrate of silver, in the matter expectorated for twelve or fifteen hours after the administration of the remedy.

"Very Respectfully,

"JNO. PITTARD, M. D."

In conclusion, it is here maintained, that the direct medication of the lungs, by means of catheterism of the air-tubes, an operation I believe not before performed, has been repeatedly accomplished—that the operation may be performed by the dexterous surgeon with ease and facility, and with perfect safety to the patient, and that the results of this method of treating disease, whether it has been employed in bronchial affections, or in the commencement of tuberculosis, have already afforded the most gratifying indications that practical medicine will be greatly advanced by this discovery.

me of cases in their practice, treated on these principles, which have recovered in a favorable manner."*

Since the publication of Dr. Ware's papers, cauterization of the larynx, in the treatment of membranous croup, has been adopted by large numbers of medical men in New England, from many of whom we have received communications on this subject, expressing their full confidence in this therapeutic agent, when timely and appropriately employed in the management of croup.

Should we give the history of a tithe of these cases, which have been thus reported to us, they would occupy a much larger space than can be appropriated to this subject in the pages of the MONTHLY. In many instances—and this is the testimony of large numbers of practitioners, experienced in the disease—the morbid process has been promptly arrested, by topical medication to the surface of the tonsils and pharynx without the introduction of the sponge-probang into the larynx.

If the proposition, with regard to the pathology of the disease, be admitted, namely:—that the exudative inflammation in croup commences invariably, as a general rule, about the fauces and upper portion of the respiratory tubes, and extends from above downward, it must be apparent that no remedy can prove so effectual in arresting the morbid process as cauterization.

That this is the true pathology of the disease has been fully established, not only by many impartial observers, but also by the success which has attended the practice founded upon this view of its nature: it is, moreover, so declared to be by some of the most eminent and experienced pathologists of the present day.

"In true croup," says Rokitansky, "which is essentially a disease of childhood, the exudative process often affects the throat and pharynx, and it extends from the epiglottis through the larynx and trachea—in some instances to the minute ramifications of the bronchial tubes—but the points it most commonly attacks are the larynx and trachea."†

Prof. Hasse, also, whose late work on Pathological Anatomy has been translated and published by the London Sydenham Society, observes, with regard to the exudatory inflammation of croup, that its progress is invariably from above downwards, and that it never spreads in the opposite direction. "This law is so universal, that where plastic inflammation occurs in the bronchi of the adult, as the concomitant of pneumonia, it can only descend to the pulmonary cells, never mount to the larynx."‡

* Boston Medical and Surgical Journal. Vol. xlii., pp. 267, 268.

† A Manual of Pathological Anatomy. By Karl Rokitansky, M. D. Sydenham Edition, vol. IV., pp. 20, 21.

‡ An Anatomical Description of the Diseases of the Organs of Circulation and Respiration. Sydenham So. Edition, p. 276.

We have no means of comparing the preceding statement of the fatal cases of croup, with the statistics of deaths from this disease in other places during the same time; but, on referring to an article published in the London Medical Gazette for 1850* on the subject of croup, we find that, in a population nearly fourfold greater than that of this city,† the average number of deaths from croup, during a period of eight years, in London, was less than three hundred and eighty a year. The number of deaths from croup in the whole State of Massachusetts, in 1851, according to the Registration Report for that year, in a population, at that time, of about one million,‡ amounted to four hundred and eleven. During the same year, in Suffolk county (which county includes Boston, Chelsea, &c.), with a population amounting to 145,000, the deaths were ninety-two.

It will be recollected, that at the census of 1850, the population of Kentucky was very near the same in amount with that of Massachusetts.¶

It is a little remarkable, diverse as are the climates of these States, that, with a population nearly equal, the number of fatal cases of croup should be so uniform. In 1852, according to the annual Report of the Registration of Births, Marriages, and Deaths, in Kentucky, for the above year, the deaths from croup were four hundred and sixty-one; just fifty more than occurred in Massachusetts during 1851.

In Philadelphia, the mortality from croup, in the five years preceding 1846, was seven hundred and fifty-six; or an average of one hundred and fifty-one a year,§ in a population which, at the census in 1850, amounted to 121,376.

These brief statistics will afford us some idea of the ordinary annual mortality from croup in some of the larger cities, and in different climates, and will exhibit, also, especially in comparison with London, the frightful mortality caused by the disease in New York during the last year.

It is now nearly fifty years since Napoleon issued, from the headquarters of Finkenstin, his celebrated general order—"d'ouvrir un concours sur la maladie connue sous le nom de croup," and offered a prize for the best essay on the nature of this disease, which served to awaken a new interest on the subject throughout the whole of Europe; and was the occasion of eliciting many learned, elaborate, and highly interesting works on the nature and treatment of this terrible malady. From that time to the

* London Medical Gazette, vol. x., p. 542.

† The number of the inhabitants of London, at the last census, was 2,362,236. In New York; in 1850, it was 515,547.

‡ At the census in 1850, the population of Massachusetts was 994,514. That of Boston proper, 136,881.

¶ The population of Kentucky was 985,405.

§ Dr. Meigs on the Diseases of Children, p. 84.

present, these inquiries have been pursued, in this country and in Europe, by eminent medical men, and the results published to the world; but, has a plan of treatment yet been discovered, recommended, and adopted generally, that has had the effect to abate the severity of the disease, or, in any considerable degree, to lessen its fatality?

In that excellent treatise on Croup, by Dr. John Ware, of Boston, the author declares, that "the received mode of treating the disease," which is very much the same for all varieties, "has come down to us by a sort of tradition from our predecessors in the profession, and varies but little, if at all, from that which was originally adopted when the disease first became the object of attention. * * * In the main, emetics and bleeding, blisters and calomel, have been the principal remedies. The depleting, reducing, and perturbing method is that upon which dependence has been chiefly placed."*

This is, indeed, true, for it must be admitted that, whilst in the management of many other diseases great improvements have been made during the last half-century, in the traditionary treatment of this affection no modifications have been generally adopted which have served to diminish, in any amount, the number of fatal cases. On the contrary, the disease is admitted, by the best and most recent authorities, to be not only progressively on the increase, but, so far uncontrolled by the ordinary therapeutic measures, as to prove fatal in nearly one half of the whole number of those who are the subjects of this affection.†

These unfortunate results, which, in the statistical records of croup, have followed the ordinary mode of treatment, will be found to have been in no degree more favorable in the history of the disease as it has occurred in our city during the past winter; and we do not hesitate to avow our firm conviction, that the employment of the reducing and perturbing plan of treatment, a plan recently recommended by more than one eminent writer, and still employed by many practitioners, has destroyed more lives, among young children, altogether, than it has been instrumental in saving. A work, by an eminent English writer, has recently been republished in this country, which has met with a very favorable reception from the profession generally, and has received the commendation of the reviewers, in our medical journals; and yet, the method urged by the author, in his "Lectures on the Diseases of Infancy and Childhood,"‡ as the appropriate plan for the management of membranous croup, if fully carried out in the treatment of the disease, would prove fatal in its results, as we conscientiously

* Boston Medical and Surgical Journal, vol. xlii., p. 261.

† *Traité du Croup*, par M. Double, p. 479.

‡ *Treatise on the Diseases of Infancy and Childhood*, by Chas. West, M. D.

believe it has done, in more instances than it has proved remedial. That we may not be misunderstood in our remarks on this heroic plan of treatment recommended by Dr. West, and employed, to a great extent, by many practitioners in this country, we shall take the liberty of giving a brief statement of the therapeutic measures by him adopted.

In cases where an attack of croup "is merely apprehended, but where catarrh exists, attended with a slight, ringing cough," Dr. West recommends that the child "be confined to the bed-room, be placed on a spare diet, and should take an emetic of ipecacuanha and antimony, to be followed by some mild diaphoretic medicine containing small doses of antimonial wine."*

But, should the disease have attained its full development, before the patient comes under the notice of the physician; or, should its access be violent, a far more energetic plan of treatment is advised by Dr. West. "The abstraction of blood, and the administration of tartar emetic, are the two measures on which your main reliance must be placed; and you must bleed largely, and give tartar emetic freely, remembering that if relief do not come soon it will not come at all—that there is not danger only, but death in delay. I have never met with an exception to the rule which prescribes the free abstraction of blood in every case of severe idiopathic croup, when seen at an early period, and before the purple lips, and livid countenance, and failing pulse, announce the long continuance of a serious obstacle to the free admission of air into the lungs. Even in very young children local depletion forms, in these cases, but a poor substitute for general bleeding; for it is not merely the abstraction of a certain quantity of blood that is needed, but its removal in such a manner as most speedily to produce an effect on the system. Bleeding from the jugular vein is preferable, under these circumstances, to venesection in the arm, since the latter often fails in children under three years old; and the blood never flows so freely as when taken from the jugular vein."†

After bleeding "largely" from the arm,—or, what Dr. West considers preferable, "in very young children," from the jugular vein, *because*, in children under three years of age, "the blood flows more freely when taken from the jugular vein,"—the free administration of tartar emetic is recommended. To accomplish any real good by means of this medicine, "it must be given," says Dr. West, "in doses of an eighth, a quarter, or half a grain, every ten minutes, until vomiting is produced; and the same doses should afterwards be continued every half hour, until decided and permanent relief has been afforded." If the medicine, when administered in

* Diseases of Infancy and Childhood, by Chas. West, M. D., p. 221, Philadelphia edition.

† Ut supra, p. 221.

the same amount as at first, fails after a little to excite vomiting, it is advised by the author to increase the dose until this effect is fully produced. The antimony thus administered, is to be continued for four or six hours, when, if "no satisfactory measure of improvement should have yet appeared, local depletion may be resorted to, or possibly a repetition of general bleeding may in some cases be ventured on."*

Later in the disease, calomel, in combination with ipecacuanha, is administered every hour or two hours, "but interrupting its use at intervals in order to give an antimonial emetic;" and, finally, these active therapeutical measures above enumerated having been thoroughly tried, and tried in vain, Dr. W. advises that a totally different plan of treatment be at once adopted. "If antimony cease to vomit," he remarks, "or if it be rejected immediately, and without effort, the fluid thrown up being unmixed with phlegm or false membrane, while the temperature sinks, the lips grow more livid, the pulse more frequent and feeble, and the paroxysms of dyspnoea are undiminished in severity; or, if the respiration, though less laborious, be attended with a sibilant, instead of a stridulous sound, it is evident that by continuing the medicine we may destroy the patient, but shall fail to cure the disease."

Under such circumstances, "an attempt must be made to arouse the child from the state of collapse into which it is sinking, by placing it for a few minutes in a hot mustard bath, and emetics of the sulphate of copper should at once be administered."† If, to the therapeutic measures already enumerated, we add that of the use of mercury, which, in addition to its occasional administration at an earlier period, is to be employed at that stage of the disease when the patient "seems sinking into a state of collapse," and under these circumstances to be fully employed, by means of its internal administration, every hour, "while at the same time a drachm of strong mercurial ointment may be rubbed into the thighs every two hours," in order to bring the system as speedily as possible under the influence of mercury," together with the application of "a blister to the throat"—if these measures are included, we repeat, they constitute the plan of treatment strongly advocated by Dr. West, and employed by many practitioners, both in Europe and in this country, for the treatment of membranous croup. "Emetics and bleeding, calomel and blisters," *Medicina agens et perturbans*, the Sangrado, traditionary treatment of the last half-century! We can hardly imagine a plan more likely to prove unsuccessful, when fully carried out, than the method of which we have spoken; and if we consult the records of this plan, we shall find that, where it has been

* Op. citat, p. 222.

† Op. citat, p. 224.

hoarse, with loss of voice and decided croupy cough. Nov. 6th, Confined to bed, with considerable heat of skin and thirst. I saw the patient this day, for the first time, at 6 o'clock, P. M. Expression of countenance anxious, skin pale, voice reduced to a whisper, respiration extremely difficult, high and characteristic, pulse frequent, skin above natural temperature, cough frequent; applied the nitrate of silver with the probang, which did not produce any unpleasant symptoms, her breathing became somewhat easier; during the night her respiration became more difficult, and an emetic was administered, which was followed by some relief. Nov. 7th, A. M., Countenance still anxious, color of skin inclining to blue, respiration not much improved, almost complete aphonia,—prescribed the following powder, to be taken every three hours.

R. Tart. Antim., gr. $\frac{1}{8}$,
Hyd. Chlor., M. gr. $\frac{1}{4}$,
m.

Applied the silver three times during the day. Nov. 8th, No improvement, sweats now freely, and has done so all night,—on coughing expectorates a little mucus, particularly after applying the sponge, continue powders and apply cold water to the neck by means of a towel. Nov. 9th, No improvement; applied the sponge, and on removing it the *false membrane* was found attached to the sponge; and on examination found it to be a membranous tube two and a-half inches in length, and about one half the thickness of milliner's pasteboard. Her respiration became immediately easier and she continued to improve from this time, the sponge was not again applied, her cough remained "croupy" for several days longer, her voice did not become natural for more than a week after, the cold water and expectorants were continued for several days. Her health has been good since: her voice becomes hoarse, occasionally, on taking cold. I should have remarked, that at my first visit, I saw patches of lymph on the tonsillory glands. On taking charge of the patient (which I did with great reluctance), I had very little hope of a favorable termination, on account of the advanced stage of the disease, and must attribute the cure to the application of the silver.

Since treating this case I have used the silver with varying success. In two cases, in which I was called early, and in which the lymph could be seen in the upper part of the fauces, the patients recovered. In one case where I was called in consultation, the patient was in *articulo mortis*. We used the silver without any relief. In two other cases, I was called late in the disease; the nitrate of silver, and other remedies were employed; but both cases terminated fatally.

Believing, as we conscientiously do, that the reducing, perturbing, plan of treating young children for croup, is, in a large proportion of cases, not only useless, but worse than useless; and that, on the other hand, we have, in the topical treatment, when judiciously combined with mild general measures, an entirely practicable, and, in most cases, an effectual means of arresting the disease, we are solicitous to remove the objections, which, for various reasons, exist in the minds of many practitioners, and hinder

their adoption of this method. We have alluded to the dogmatic scepticism of one class, but fortunately this class of "unbelievers in the earth's rotation," is very small. Still, there is a much larger class, who, whilst they admit both the practicability and utility of the treatment, reject its employment because of the supposed difficulty of medicating the larynx in disease. This difficulty, we can assure the profession, does not exist. It is neither really difficult to accomplish, nor is it in any degree a hazardous operation. Any medical man who understands the relative anatomy of the parts, can, with very little practice, readily pass the sponge probang into the larynx; and, as benefit comes from the attempt (for the parts cauterized thereby are those first affected in croup), no time should be lost in putting the method into practice, in the onset of the disease.

During the prevalence of the disorder, last winter, when the writer was receiving calls, daily, to visit cases of croup, a request came from a physician residing in Morrisania, to meet him in consultation in a case of membranous croup. As the writer could not comply with the request, his assistant, Dr. Richards, attended the consultation; and he testifies to the fact, that the case was one exhibiting all the characteristic signs of true croup, of a very severe grade. The physician, Dr. Mann, who is an accomplished and experienced practitioner, had had many opportunities of treating croup by the ordinary method; but in this case, which we shall give, he employed, for the first time, we believe, cauterization of the larynx; and it will be seen that in his hands, the operation was both practicable and successful. So much pleased was Dr. M. with its effects that he has since placed his entire dependence, as it will be seen, on topical medication alone in the treatment of the disease.

The following communication has just been received from Dr. Mann:

Morrisania, May 12th, 1854.

DOCT. HORACE GREEN,

DEAR SIR:—The enclosed list of cases of Cynanche Trachealis, I send agreeably to your request. In none of them were any internal remedies used, not even a preparatory emetic, except—where circumstances required it—a mild cathartic. With this exception, they were all treated by topical applications exclusively.

Case 1st.—On the 7th of February last I was sent for, at 4 o'clock, A. M., to attend Alfred —, aged four years. Circumstances prevented my seeing him until 8, A. M. I then found him laboring under true membranous croup. The attack commenced on the evening of the 6th, preceded by hoarseness and slight cough. I had previously attended the patient on Jan. 8th, for pneumonia of the left lung, from which he had recovered perfectly, though still somewhat weakened by this illness. I found the little fellow struggling for breath, each effort at inspiration accompanied by a loud crowing sound, the muscles of the mouth contracting

violently at the same time, the countenance and lips livid, a cold perspiration standing in large drops upon the face, and every symptom indicating rapidly-approaching dissolution. I immediately passed through the larynx and nearly down to the bifurcation of the trachea, a sponge-armed probang containing one drachm of a sol. argent. nit. xl. grs. to $\frac{5}{2}$ j. The first effect of this application was a severe fit of coughing and choking, followed by copious vomiting, which relieved the respiration temporarily. Between this time, viz., 8 A. M. and 7 P. M., five applications were made; at about the latter hour Dr. Richards saw the patient with me. We found him sitting up, perfectly conscious and able to speak, and had taken some beef tea. Respiration entirely free from any crowing sound, which could now only be heard during a fit of coughing. Skin moist. *Feb. 8th.* Continues still improving; respiration natural; slept at intervals during the night; appetite craving; cough troublesome; slight fever; face flushed. *Feb. 9th.* No symptoms of croup remain; slight bronchitis, which yielded in a few days to mild remedies.

Case 2d.—On Feb. 11th, I was called to see Sarah —, aged two years. The patient had been suffering for two days previously, with hoarseness, and what the mother called a “sore throat,” accompanied by a loud ringing cough. On examination of the larynx and fauces, I found them considerably inflamed. The tonsils were enlarged; and, adhering to the posterior surface of these glands, I discovered a white substance lining them, and extending downward toward the larynx. The symptoms of true membranous croup were strongly marked. Skin hot and dry; face flushed; countenance expressive of anxiety and suffering; cough and respiration characteristic. I immediately made an application by means of the sponge probang to the fauces and larynx, of a sol. argent. nit. grs. lx. to $\frac{5}{2}$ j., then passed through the rima glottidis.

Feb. 12th. Patient playing about the room; respiration natural; cough troublesome, and accompanied by a free secretion of thick, ropy mucus, which the patient, on raising, immediately swallows. Detached he white substance from one tonsil, and found it to be a firm membranous exudation. This child had one other application of a weak solution, and was perfectly recovered on the third day after the first visit.

Case 3d, Feb. 25th, John —. This patient was seized with slight hoarseness toward evening, on the 24th, but awoke at about 4 o'clock, A. M., with unmistakable symptoms of croup, which were rapidly increasing in urgency and danger. Ipecac. onion draughts, and mustard, with other domestic remedies having failed to produce relief, I was summoned to the sufferer. Applied a sixty-grain sol. at once, 7 A. M. At 4 P. M. found the respiration much relieved, the patient being better in every respect. Applied a thirty-grain sol.

Feb. 26th. The little fellow saw me tying my horse, and fearing, as he expressed it, that I was going to “run the poker down his throat again,” scampered off and hid.

The above cases it gives me pleasure to submit to your perusal. I should have regarded any one of them as nearly hopeless under the old plan of treatment.

Very respectfully yours,

F. P. MANN.

Doct. Horace Green, 12 Clinton Place.

With the history of one more case, voluntarily furnished by Dr. M., an intelligent physician of a neighboring State, we shall close our selections from the mass of testimony that has been received, in favor of the plan of treatment advocated in these pages.

DEAR SIR:—

You will excuse the liberty which I assume in thus addressing you. I cannot forego the opportunity I have in expressing to you the gratitude I now feel for your kindness to me, and for the information I acquired in the short time I passed in your office, during my late visit to your city. So elated do I feel with the result of your mode of treating diseases of the air-passages, that I must trouble you to read an account of my first experience in the use of topical applications, in an interesting case of croup.

Feb. 18th, at 8 P. M., a gentleman entered my office, in some haste, and requested me to step across the street and see his child, which he feared was dying. Without ceremony or question, I accompanied him home, where I found two physicians, with some dozen, more or less, neighbors, surrounding the bed of a little fellow, six years of age, the sound of whose inspiration and expiration was to me a sure index of the nature of his disease. In the diagnosis we could not be mistaken. He was in the very last stage of membranous croup. The patient was of a bilious temperament, black hair and eyes, dark complexion, very large head, with a short and very thick neck; broad chest, and, for a boy of his age, very muscular. It was with the utmost difficulty that he could breathe, every muscle of the body seemed brought into action, at each respiration; the countenance was flushed and anxious, the lips pale and swollen, the eyes protruded, nostrils dilated, and ever and anon that cough, the sound of which you know, but which I cannot describe; pulse beyond enumeration. All these were sufficient to cause the friends and physicians, as well as myself, to believe the child to be in *articulo mortis*. I, however, proposed cauterization with the probang; the physicians, after explaining to them what I meant, opposed it, on the ground that it was not only perfectly useless, but that it was utterly impossible to pass it into the larynx; the which, I of course flatly denied. I then, without much regard to professional etiquette, as the case demanded action rather than ceremony, and also because I was determined, if possible, to try your plan, explained to the friends, as well as I could, the nature of what I proposed to do, the objects in view, and the probable results that might reasonably be anticipated; nor did I keep back the fact, that the child, notwithstanding, might die.

The friends immediately consented to my doing what I pleased, as the child would die without immediate relief. All the usual remedies, such as emetics, leeches, blisters, &c., had been used. I immediately made a sol. of argent.-nitrat. cryst. fifty grs. to the ounce of aqua. distil., saturated the sponge, and made the attempt to pass it into the larynx; the child struggled and I did not succeed, but what was very good, I did succeed in sponging the fauces and epiglottis. My failure, however, to pass into the larynx, was a sort of triumph to the nonbelievers. However, the child strangled, coughed, and discharged considerable ropy mucus. After a delay of some fifteen or twenty minutes, I secured the head of the child,

and made the attempt again; and what is *better*, I *succeeded well*. The little fellow strangled, coughed, and discharged a large quantity of thick ropy mucus, with patches or shreds of membrane, and in one minute was sensibly relieved. In ten minutes, the wheezing sound, in expiration, was gone. Then was my hour of triumph, and I made use of it. After waiting a half hour, I prescribed hyd. sub. mur., gr. i.; ipecac., gr. i.; opii., gr. $\frac{1}{8}$, every hour, and left for home.

It will be unnecessary to follow out the farther history of the treatment in this case, as detailed by Dr. M——. Topical, with the required general treatment, was continued for several days, and the patient recovered perfectly.

The history of these last cases have been given, not only as corroborative of the efficacy of the treatment, but to show, what has proved true in many other instances, that where intelligent medical men have made the attempt, earnestly, to medicate the larynx, their efforts have, in all cases, been successful.

It was our intention at the close of this paper to have submitted a detailed statement of the plan, both local and general, that we would advise to be pursued in the treatment of membranous croup. But the pages allotted us in the *Monthly*, have been already fully occupied. Besides, these views have been stated at length, in our work—"Observations on the Pathology of Croup, and its Treatment"—which has been several years before the medical public.* The accumulated experience furnished from

* With regard to the general treatment in the management of croup, we accord fully with Dr. Ware, in the propriety of avoiding, generally, "all reducing, depleting, and disturbing remedies." We would administer, as required, mild emetics, of ipecacuanha, or ipecac. and sulphate of zinc. Calomel alone, or in combination with Dover's powder, or opium, is frequently required, but never in *scruple doses* as it has been recommended to be given to young children, by some practitioners in this city. These remedies, together with the inhalation of the vapor of warm water, may be employed in the treatment of croup. But our main dependence, in all stages of the disease, should be on *cauterizations*. "This measure," says Prof. Wood, in his work on the "Practice of Medicine," "after an unsuccessful employment of other means, the practitioner would certainly be justified in resorting to." We would advocate its employment in the very access of the disease, as soon as the nature of the malady is ascertained. We have seen the disease repeatedly arrested in its formative stage, by a few prompt applications of the nitrate of silver to the fauces, and about the opening of the glottis.

After the inflammation has advanced, and the surfaces of the larynx have become involved in the disease, the argentine solution should not only be applied to the tonsils, and to the faucial region generally, but the applications must be extended into the laryngeal cavity.

If the exudations are not already formed into adventitious membrane, the employment of a few successive applications below the epiglottis may be sufficient to

the treatment of a large number of cases of croup, since the publication of that work, on the plan therein advocated, *without the loss of a single patient, in our own practice*, has confirmed us in the opinion of its efficacy over all other methods hitherto advanced, for the treatment of this terrible malady; and it has impressed us, with the full belief, that had the prejudice against topical medication not existed with the profession in this city—a prejudice, which we regret to add, has been excited, and fostered by some of our prominent medical men—and this method conjoined with *mild* constitutional remedies, had been generally adopted, in the treatment of those *six hundred and eighty* fatal cases of croup, which occurred during the last year, not one half of that number would have perished, at least from that disease of which they died.

arrest the plastic inflammation altogether. But even in a more advanced stage of the disease, when, from its continuance and the severity of the disease, we have reason to apprehend the formation of a false membrane, or a “tubular mould” throughout the larynx and trachea, we should not despair of removing the obstruction, or of arresting the inflammation.

When called, therefore, to a case of croup in this its second or developed stage of the disease—and unfortunately, it is not until this period of the affection that medical aid is resorted to, in a large proportion of the cases of croup—the local employment of the nitrate of silver, conjoined with other appropriate measures, should be entered upon at once.

An application may first be made to the tonsils, and about the opening of the glottis. After a delay of from fifteen minutes to an hour, the operation may be repeated, and the sponge wet with the solution should then be passed into the larynx. The cauterizations may be repeated once in two, four, or six hours, according to the effect produced and the intensity of the disease.

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ON THE SUBJECT OF PRIORITY

IN THE

Medication of the Larynx and Trachea.

BY

HORACE GREEN, M. D.

[From the American Medical Monthly, April, 1854.]

I FEEL that some apology may be considered due from me to the readers of the MONTHLY, and to my professional brethren generally, for claiming their attention to the matter of *priority* in the application of a solution of nitrate of silver to the interior of the larynx and trachea.

If so, let it be remembered—as many of the profession certainly will remember—that, when the subject of cauterizing the mucous membrane of the air passages was first brought before the medical public, many years ago, by the writer; when it was asserted that a sponge-probang loaded with a solution of nitrate of silver, “could, not only without injury, but with manifest advantage in disease, be passed through the glottis and larynx down into the trachea;” that then, the *savans* in the medical profession pronounced it an “anatomical impossibility,” an “unwarrantable innovation in practical medicine;” whilst many others, anxious to echo these sentiments, but less cautious of their phraseology, did not hesitate to denounce the author a charlatan, and his practice a “humbug!” If, in connection with these antecedents, it is remembered that now, when this once condemned practice has gained adherents among the best of the profession in every country, and is admitted, by high authority, to be not only a “most valuable addition to practical medicine, but that the results of this method of treatment will lead to important changes in the prophylaxis and cure of pulmonary phthisis;” * when nearly all the leading journals of Europe have

* British and Foreign Medical Review, Vol. XXIV., p. 504.

reviewed and, in every instance, have commended the practice; when many foreign books and monographs have been written on the different diseases of the air-passages for which this treatment is appropriate, in all of which reviews and works, the credit of the introduction of topical medication to the air-passages has been accredited to the writer;—When, I repeat, after all these things, the attempt is now made in Europe (as it had been done repeatedly before in this country, and by those too who were, at first, the foremost and the loudest to denounce the practice and its author) to give the priority of the treatment to others, who never shared, in any degree, in the obloquy attending its introduction; it will be admitted, I think, that there is a propriety in submitting to the candid portion of the profession, the question involved in the following statement of facts.

A few days ago, my friend, Dr. Mott, of this city, put into my hands a copy of the *Gazette Hebdomadaire de Médecine et Chirurgie*, which was published in Paris, Jan. 27th, 1854. This No. of the *Gazette Hebdomadaire*, which is a widely circulated medical journal, contains the following letter, addressed to the editor, by Dr. John G. Adams, of this city.

“MONSIEUR LE REDACTEUR—

J'ai, par l'obligeant intermédiaire de M. Robert, fait hommage à la Société de Chirurgie, dans sa séance du 4 Décembre, 1853, d'une tige porte éponge à trois branches, entièrement semblable, *pour la forme*, à celles dont on se sert aujourd'hui à New York, avec les modifications imaginées par M. le docteur Buck, Chirurgien de New York City Hospital, et les perfectionnements de M. Charrière, fils. Permettez moi d'entrer, à cette occasion, dans quelques détails historiques et pratiques.

La priorité a été réclamée, au sujet de l'invention de l'instrument lui-même et au sujet de son introduction dans la cavité laryngienne.

Je puis affirmer, après des recherches consciencieuses, que l'instrument a été imaginé par M. le docteur David Green, dans le but d'appliquer une solution de nitrate d'argent au larynx, au pharynx, et à l'œsophage. Il se servait d'abord d'un catheter mâle, avec un morceau d'éponge attaché au bout par un fil. Après plusieurs expériences, il a fini par adopter une tige en baleine, courbée en quart de cercle avec une éponge attachée par des fils solides. Cet instrument avait un inconvénient: les fils s'usaient en peu de temps; l'éponge pouvait se détacher, accident des plus graves si elle eût été à ce moment engagée dans le larynx. En outre, on était obligé d'avoir un grand nombre d'instruments, pour ne pas employer la même éponge chez plusieurs malades. M. Buck a fait fabriquer une pince d'argent, à deux branches, avec un anneau coulant destiné à fixer l'éponge. Enfin, plus récemment, ayant eu occasion de demander une pince semblable, à M. Charrière, fils, celui-ci jugea utile d'y ajouter une troisième branche, pour mieux retenir l'éponge et éviter tout danger d'échappement. Dans l'instrument ainsi construit, une des branches est munie d'un point d'arrêt, par-dessus lequel peut passer un anneau coulant constricteur, à l'aide d'une encoche de baïonnette; une fois que l'anneau a traversé le point d'arrêt, on

lui fait exécuter un demi-tour, et alors, ne pouvant plus reculer, il fixe l'éponge de la manière la plus solide.

Maintenant, qui s'est servi le premier de cet instrument, pour porter une solution caustique jusque dans le larynx? M. Horace Green, de New York, soutient, dans l'introduction de son ouvrage sur la bronchite, qu'en 1841, deux ans avant la publication de la traduction en Anglais de l'ouvrage de MM. Trousseau et Belloc, il avait l'habitude d'appliquer la cauterization au larynx. Je dirai, à ce sujet, que les travaux de MM. Trousseau et Belloc étaient ultérieurement connus en Amérique, où M. le Professeur J. M. Smith en avait parlé dès 1828, dans ses leçons à l'Université de New York.

En France on a mis en doute la possibilité d'introduire l'éponge jusque dans le larynx. J'ai, pourtant, constaté ce fait par trois fois, de la manière la plus formelle.

M. Green va plus loin: il affirme avoir pénétré *dans la trachée jusque' à sa bifurcation*, et cela facilement et sans inconvénients. Je me borne à répéter l'assertion.

Agréez, etc."

"JOHN G. ADAMS,

Ancien Secrétaire de l'Académie de Médecine de New York,

Ancien éditeur du *Medical Times* (New York), etc."*

* [TRANSLATION.]

"MR. EDITOR—

Through the kind intermediation of M. Robert, I submitted to the Surgical Society, at its meeting on the 4th of December, 1853, a sponge probang, with three prongs, exactly similar, in respect to form, to those now in use in New York, with the modifications invented by Dr. Buck, Surgeon of the New York Hospital, and the improvements added by M. Charrière. Allow me, at this time, to enter into a few historical and practical details.

The priority of the invention of the instrument itself, as well as of its introduction into the laryngeal cavity, has been a matter of dispute.

I can affirm, after conscientious investigation, that the instrument was invented by Dr. David Green, with the design of applying a solution of nitrate of silver to the larynx, the pharynx, and œsophagus. He, at first, made use of a strong catheter, with a bit of sponge fastened to the end with thread. After several experiments, he finally adopted a whalebone, curved in the form of a quarter circle, with a sponge fastened by strong thread. This instrument was inconvenient in one respect: the thread became worn after a little time, and the sponge might get unfastened, an accident which would be attended with the gravest consequences should it occur while in the larynx. Besides, it was necessary to have a great number of instruments, in order not to use the same sponge for several patients. Mr. Buck caused silver forceps, with two prongs, to be manufactured, with a sliding ring intended to fasten the sponge. Finally, having recently had occasion to procure similar forceps from M. Charrière, he (M. Charrière) judged it expedient to add thereto a third prong, in order the better to hold the sponge, and to avoid all danger of escape. In the instrument thus constructed, one of the prongs is armed with a catch, above which a sliding-ring can pass, by means of a notch and slide of the form used to fasten bayonets; when the

That attempts to do me injury were being made among my professional *confrères* abroad, and especially with those who have honored me with their acquaintance and correspondence, I have been for some time fully aware. Indeed, before Dr. Adams reached Europe I was given to understand, from a reliable source, that such efforts would be made; and these intimations were fully confirmed by letters subsequently received from my friends in Europe, and through other sources. This matter, then, comes not unexpectedly, and I have only been waiting for some such public manifestation as is exhibited in the above letter, to counteract, in the best way in my power, the injuries attempted to be wrought by Dr. Adams, in the fulfilment of his *honorable* and *patriotic* mission.

With regard to the *priority* in the invention or improvement of this particular instrument, I have nothing to say, although every medical man who has visited me during the last four or five years, might have seen an instrument, its counterpart in every essential characteristic, which has been in use in my office since 1849. This instrument for cauterizing the larynx was invented by my friend and assistant, Dr. J. W. Richards.

This matter of the instrument, however, is of but little moment; yet Dr. Adams considered an improvement, or slight modification, in a throat probang, made by "Dr. Buck, of the New York Hospital," of such grave importance, that he first induced M. Robert to bring it before the Society of Surgery, in Paris; and then publishes, with a drawing, a full description of it, in one of the leading French medical journals! In doing this, however, Dr. A. takes the occasion to utter so many misrepresentations (not to characterize these acts by a harsher term) with respect to myself, and the priority

ring has once passed the catch, it must be turned half-way round, and then, not being able to slip back, the sponge is fastened in the strongest manner.

Now, who first made use of this instrument to carry a caustic solution into the larynx? Mr. Horace Green, of New York, declares, in the introduction to his work on bronchitis, that, in 1841, two years before the publication of the English translation of MM. Trousseau and Belloc's work, he was in the habit of applying cauterization to the larynx. I will say, upon this point, that the labors of MM. Trousseau and Belloc were further known in America, where Professor J. M. Smith had spoken of them as early as 1828, in his lectures at the University of New York.

In France, the possibility of introducing the sponge into the larynx even, has been doubted. I have, however, fully proved this fact three times in the most formal manner. Mr. Green goes farther: he affirms that he has penetrated *into the trachea as far as its bifurcation*, and that too, easily and without inconvenience. I limit myself to a repetition of the assertion.

Accept, &c.,

JOHN G. ADAMS,

Former Secretary of the Academy of Medicine, of New York,

Former editor of the Medical Times (New York)."

of the introduction of medication into the cavity of the larynx, and has made these statements, as I have learned from other sources, to many of my professional friends in Europe, with the manifest intention of injuring me in their estimation, that I feel compelled to adduce certain facts, which can be fully substantiated, and which will disprove most emphatically the assertion of Dr. Adams.

In the first place, Dr. A. declares, that the priority of invention of the instrument for cauterizing the larynx, as well as that of its introduction into the laryngeal cavity, has been a matter of dispute.

2d. That after "conscientious investigations," he can affirm that the instrument was invented by Dr. David Green, with the design of applying a solution of nitrate of silver to the larynx.

3d. That "*Mr.* Horace Green, of New York, declares, in the introduction of his work on Bronchitis, that in 1841, two years before the publication of the English translation of MM. Trousseau and Belloc's work, he was in the habit of applying cauterizations to the larynx."

That "the labors of Trousseau and Belloc," Dr. A. will say, were known in America, where Professor J. M. Smith had spoken of them, as early as 1828,* in his lectures at the University of New York.

Now, each and all of these assertions, as Dr. A. "conscientiously" knows, are without any foundation in truth.

The facts, in relation to the history of the instrument for medication of the air-passages, and of the diseases for which this practice was particularly instituted, are briefly these. In 1832, as I have stated in my work on "*Diseases of the Air-Passages*" (p. 45), a case of well-marked *follicular disease* came under my notice. It occurred in a clergyman in New England, and was the first case to which my attention had ever been called. The disease had extended into the larynx, producing constant irritation in those parts, and an entire loss of voice; and this in a robust individual, otherwise in good health. All the ordinary means of treatment then known for laryngeal diseases, such as local depletion, counter-irritation externally, with alteratives and antimonials internally, were perseveringly employed, without in any degree relieving my patient. During the treatment of this case, another of equal interest and importance came under my observation. This patient was the Rev. Dr. Lindsly, then the officiating clergyman of Park Street Church, in Boston, who, from the severity of the disease, was

* The works of Trousseau and Belloc were not published in Paris until 1837, yet Dr. A. affirms that they were known in America, "where Professor J. M. Smith had spoken of them in his lectures at the University of New York, as early as 1828"! This is a remarkable *anachronism* to be made by one who claims to be so "conscientious" in his researches.

obliged, for several years, to relinquish altogether his official duties. The similarity of the symptoms in these two cases, the persistence of the disease, and the utter failure of all treatment to benefit my patients, called my attention, very decidedly, to all these points. It was in the first years of my professional life, and, until then, I had not lost my faith in the certainty of the healing art. From this time, I set about my inquiry into the nature of a disease whose pathology and treatment could not, I was confident, be found in the books. For this purpose, when I could leave my country practice, I visited, at different periods, the principal hospitals in the United States. I addressed letters of inquiry, on the subject of this disease, to eminent medical men, as some of them, now living, will remember. I collected together the history of a large number of cases of the disease, then called "Clergyman's sore throat," "Throat ail," &c.; and from all these, and from subsequent observations, I adduced those views which I have elsewhere given, of the nature and pathology of "Follicular Disease of the Air-Passages,"—views which, in this connection, I may be permitted to say, have been since adopted by almost all pathologists who have written on the subject. In 1838, two years after my removal to this city, I visited the hospitals of Europe; and one of the principal reasons for making this tour was, to ascertain from the medical *savans* in Europe, if any discoveries or improvements had been made by them in the pathology and treatment of laryngeal and pulmonary diseases. It was whilst absent at this time, as I have before stated in my writings, that I obtained, in a conversation with Sir James Johnson, of London, who has since died, the first idea I had ever entertained of the possibility of entering the cavity of the larynx with medical agents. At this interview, in alluding to the difficulties and the uncertainty which attended the treatment of laryngeal disease, Dr. Johnson intimated that all modes of treatment would fail us, until appropriate therapeutic remedies could be applied directly to the lining membrane of these parts. This observation, in connection with my past experience of the nature of the disease, and especially of its local character, made on my mind an abiding impression.

As I state in the introduction of my work, I returned home from Europe the middle of November, 1838. On the 26th of November, ten days after my arrival in New York, the Rev. Mr. Tilden, of Rutland, Vermont, who had suffered many months under follicular laryngitis, came under my care, and was treated by topical applications of the nitrate of silver to the pharynx and larynx. The history of this case I find recorded in full in my case book at the time; and, moreover, Mr. Tilden still lives and will testify to these facts. In the course of 1839, I treated many cases of laryngeal disease, by topical medication; and in November, 1839, I reported before the "New York Medical and Surgical Society" (of which Dr. Adams was

at that time a member), some ten or twelve cases of chronic laryngitis,—as the records of that Society will show,—which had been treated by me in the same manner; and yet Dr. A. attempts to convey the impression, by a direct misrepresentation in regard to what I have said in my introduction, that it was not until 1841 that “Dr. Green was in the habit of applying cauterizations to the larynx.” But, on this point, I have only to give Dr. Adams’ own testimony. In the proceedings of the meeting of the New York Medical and Surgical Society, held Sept. 19th, 1840, is the following record: “Dr. Green made some remarks on laryngitis, particularly as it occurs in clergymen; considers the disease as commencing in the fauces and throat. The larynx does not become involved until some time afterwards. Has generally succeeded with local applications and constitutional remedies. Latterly, has used with advantage a strong solution of nit. argent, x to xxx grs. to $\frac{3}{4}$ i water, introduced into the glottis by a sponge and probang. Fifteen cases reported in all.”

This record of the doings of the Society is in Dr. Adams’ own handwriting, and has appended to it the signature of “JOHN G. ADAMS, Sec’y.” If any further proof is necessary to establish the very strange perversity of Dr. Adams, in this matter, it may be found in the following facts; all of which can be fully substantiated.

In 1843, four years after I had employed cauterization of the larynx with the sponge-probang, and *one year* after Dr. A.’s own testimony to this fact, the man to whom he now gives priority, *Dr. David Green*, called at my office, and saw, for the first time, my instruments for the treatment of laryngeal and bronchial disease by topical medication. I had not met Dr. Green before, and at this interview I not only exhibited my instruments, but explained to him my method of introducing medication into the air passages; and it was after this that Dr. G. employed the same form of probang that I was then using, and had been employing for several years. Dr. Green at this time made no allusion whatever to the subject of his ever having made any attempt, by means of any instrument, to cauterize the larynx. If he had done it previous to 1838, he certainly should be able to give names and dates, and thus establish the claim made by Dr. A. to “priority.” Dr. Adams, however, knew well, when he addressed his letter to the editor of the Gazette, that neither Dr. David Green or any other man preceded me in this matter. He knew perfectly well that as late as 1847, a part of the members of the New York Medical and Surgical Society (and these are historical facts in the unwritten proceedings of medical *cabals* in our city), who had condemned the practice of topical medication, and had repeatedly and publicly denied the possibility of cauterizing the interior of the larynx—that these men formed themselves into a *clique*, of which he was one of the most active members, for the acknowl-

edged purposes of effecting my professional ruin; and all this for the reason, and only for this reason, that I would persist in employing, and had written a book recommending, topical medication in the treatment of laryngeal and bronchial diseases; a practice which the chairman of their committee (Dr. J. A. Swett) appointed to inquire into the matter, declared to be "a dangerous and an unwarrantable mode of treatment." He knew, too, that he was one of the "thirteen," who, for the above cause, and to effect the purpose to which I have alluded, obtained a majority vote in the New York Medical and Surgical Society, on the following preamble and resolution; namely, that, "Whereas, Dr. Horace Green has rendered himself disagreeable to a majority of the members of this Society, therefore, resolved, that he be requested to withdraw from the Society." Thus violating the constitution of the Society, and outraging every honorable principle of professional or gentlemanly associations.

Dr. Adams also knew that his "conscientious researches" consisted in this: that several members of this very party, after the practice which they had failed to suppress had gained credit with the profession, called on Dr. David Green (as Dr. David Green himself assured me), and "endeavored to persuade him to testify that he had preceded me in making medicinal applications to the cavity of the larynx"! But this Dr. Green refused to do.

"I limit myself" to this record of facts with regard to the first and principal statements in Dr. Adams' letter.*

It remains for me to examine briefly that portion of Dr. Adams' communication, in which he refers to the labors of MM. Trousseau and Belloc, and in which he endeavors, by a direct misstatement, as I have shown, in regard to facts and dates, to convey the impression that I have not accorded to these distinguished writers the honor which is their due. This is not a recent accusation. It originated with a portion of the members of that society to which I have alluded; and on the publication of my work on Diseases of the Air-Passages, it was reiterated; and it was also asserted by several medical journals in my own country, that "in applying topical remedies to the laryngeal cavity, I had done so after the manner of MM. Trousseau and Belloc."

As this is not true, for I commenced with my method of cauterizing the

* Should Dr. A. for any reason be unable to bring to mind these reminiscences of the past, he must be able, I am quite sure, to recall the fact that, several years before the last events to which I have alluded, he placed himself under my care, and was treated (successfully, I believe) for pharyngo-laryngeal disease, by excision of the uvula, and topical applications of the nitrate of silver to the diseased parts. If the question should arise in the minds of any of the readers of the MONTHLY, why, under these circumstances to which I have alluded, Dr. A. did not apply for professional aid to the physician who, from having been the first to practice cauterization, as Dr. A. affirms, must have been the most experienced expert, I cannot answer.

larynx before I knew of the writings of Trousseau and Belloc; and inasmuch as this question has not been considered, so far as I know, by any writer here, I shall take the opportunity to show that foreign authors have accredited to me an honor which many of my own countrymen have evinced great anxiety to deny me. In none of my writings have I claimed priority in medicating the mucous membrane of the larynx. On the contrary, it will be seen by a reference to the work of which I have spoken, that I have there expressly said, that "to MM. Trousseau and Belloc belongs the honor of having been the first to prescribe and employ topical medication in chronic diseases of the larynx," p. 203. This, however, I do claim, that I was the first to pass a sponge-probang, loaded with a strong solution of nitrate of silver, below the epiglottis, through the larynx and rima glottidis, down into the trachea; thus reaching, with more certainty and more effectually, the disease of these parts. I claim that I was the first to apply topical medication, in *this way*, in the treatment of chronic and acute laryngeal diseases, in bronchitis, asthma, and in membranous croup.

This operation has never been claimed by M. Trousseau, nor by any of his own countrymen for him, as I shall be able still farther to prove.

By referring to the work of Trousseau and Belloc, it will be seen that when they desired to cauterize the "top of the larynx" the operation was performed after this manner:

"We saturate completely," they say, "our sponge with a solution of nitrate of silver; that done, we cause the mouth to be opened wide, depress the tongue with the handle of a spoon, and introduce the port-caustic. As soon as it has passed over the isthmus of the gullet, it produces an effort of deglutition, which raises the larynx. We seize this moment for bringing forward the sponge, which, in the first part of the operation, had been carried to the entrance of the œsophagus. By this means we reach the opening of the larynx, by elevating the epiglottis; and then, by pressure, it is easy to express the caustic solution into the larynx."*

This account of MM. Trousseau and Belloc's method of operating is also given in full, in my work on bronchial diseases. Since the publication of this work, some of the British writers have claimed for Sir Charles Bell priority in the application of caustic to the aerial mucous membrane. In a

* Nous imbibons complètement notre éponge d'une solution de nitrate d'argent; cela fait, nous faisons ouvrir largement la bouche, nous abaissons la langue avec le manche d'une cuiller, et nous introduisons le porte-caustique. Dès que l'on a dépassé l'isthme du gosier, il s'opère un mouvement de deglutition qui porte le larynx en haut. Nous saisissons ce moment pour ramener en avant l'éponge, qui, dans le premier temps de l'opération, avait été enfoncée jusqu'à l'entrée de l'œsophage. Par cette manœuvre, on revient sur l'entrée du larynx en relevant l'épiglotte, et il est facile alors, en appuyant, d'exprimer la solution caustique dans le larynx.—*Archives Générales de Médecine. Tome III., p. 313, 1838.*

work recently issued from the London press, by Dr. John Hastings, "on Diseases of the Larynx and Trachea," and their treatment "by the local application of caustics," the author remarks: "This mode of treatment appears to have been first employed by our distinguished countryman, Sir Charles Bell, who little conceived how valuable it would eventually be found, or how extensively it would be employed."*

Dr. Hastings admits that "the great merit of its revival is mainly due to Dr. Horace Green, of the United States, who published the first work that has been wholly devoted to this subject; and it is only doing justice to Dr. Green to acknowledge the great value of his labors in this new field of inquiry. But so little attention and consideration had the treatment received from the medical world, that in some of the reviews of Dr. Green's works in this country, the critics seem to have been wholly unaware of the labors of Sir Charles Bell, and awarded to Dr. Green the merit of its introduction, instead of giving it to their own countryman."† The operations of Sir Charles Bell consisted in his having performed cauterization of the larynx, in several instances, as early as 1816; twenty-one years before the publication of the work of MM. Trousseau and Belloc. In the "Surgical Observations," &c., of Charles Bell, published in London, in 1816, will be found a record of these cases. In one instance, noticed in this work, a young woman was brought into the hospital with extensive ulcerations of the glottis. Mr. Bell's manner of operating in this case, is thus described by himself: "I made a small pad of lint, and attached it to the ring of a catheter wire, and bent the wire so as to pass over the tongue and epiglottis; I dipped the lint in a solution of twenty grains of the caustic to half an ounce of water, and touched the glottis with it in this manner. With the finger of my left hand I pressed down the tongue, and stretched the forefinger over the epiglottis; then, directing the wire along my finger, I removed the point of the finger from the glottis, and introduced the pad of lint into the opening, and pressed it with my finger."‡

This treatment was "considered hazardous," and Sir Charles Bell did not continue to employ it. "That great man," says Dr. Hastings, "was too much occupied with other pursuits to work out the discovery in the manner it deserved. I call it a discovery, because it was previously, and by most practitioners is still, believed to be utterly impossible to pass any foreign body into the larynx and trachea, without producing violent spasm or even suffocation. Such opinions have often reached me, coming from men occupying the highest walks in their profession, who ought to be imbued with

* Treatise on Diseases of the Larynx and Trachea. By John Hastings, M. D., &c. London. Introduction, p. v.

† Op. Citat, p. xi.

‡ Surgical Observations, being a Quarterly Report of Cases of Surgery. By Charles Bell: London, 1816, page 34.

a sufficient degree of liberality to prevent the condemnation of a practice, or, indeed, the denial of its practicability, for no better reason than that they do not understand it themselves.”*

Besides Sir Charles Bell, there are several other English surgeons for whom some credit has been claimed by foreign writers, for the revival of this practice, since Mr. Bell's day. Mr. Vance, a naval surgeon of eminence in London, was in the habit of employing topically a solution of nitrate of silver, in the treatment of laryngeal diseases. Mr. Vance does not appear to have left any record of his labors on this subject; but from the great success he met with in practice, Mr. Hastings thinks he must have applied the solution both to the larynx and trachea; although medical men, who were intimately acquainted with his mode of practice, have informed Mr. Hastings “that he never introduced the solution of the nitrate of silver below the glottis, but contented himself with sponging the back of the throat.”†

Dr. Stokes, in his work on “Diseases of the Chest,” remarks: “The best means of applying these caustic lotions is that practised by Mr. Cusack: a brush of lint, of the requisite size, is sewed on the end of the finger of a glove, which is then drawn on the index finger of the right hand. The patient should be made to gargle with warm water; and the lint, being dipped into the solution, can be at once, and with great facility, carried to any part of the pharynx, and even to the rima.”‡ After the death of Mr. Vance, no one was found, Mr. Hastings says, to take up the treatment which had proved so successful in the hands of this surgeon, and it remained entirely neglected in London, until revived by himself, after the publication of my work in 1846.

This, then, constitutes a brief history of what has been done in Europe, by those who have employed the local application of caustics, in the treatment of diseases of the air-passages. By this, it will be seen, that no one had succeeded, or claimed to have succeeded, in passing the sponge-probang, wet with the caustic solution, into the larynx, until after the announcement in my work, published in 1846, that “it is an operation which, in the treatment of laryngeal disease, I have been in the practice of performing every day for several years.”

Previous to that time, the medication of the larynx and trachea by cauterizations, in the numerous forms of disease of these organs, had only been ventured upon by a few individuals in Europe; and in the practice of these, it was limited to the “sponging of the back of the throat,” or, at the most, to the application of the solution to the aperture of the glottis, or, by pressure of the sponge, to the discharge of the fluid into the larynx. In

* Op. Citat. Introduction, p. xii.

† Op. Citat. Introduction, p. viii.

‡ A Treatise on Diseases of the Chest, page 258.

this country, so far as I am aware, previous to that time the employment of caustic solutions to the interior of the larynx and trachea, was "entirely neglected." Now this treatment receives the sanction of, and is employed by, the most eminent men of our profession, not only in my own but in almost every country in Europe. It has not only proved successful in the treatment of follicular disease of the air-tubes, and in the ordinary forms of angina, but eminently so in the management of many cases of hooping-cough, and of membranous croup. If there is any honor in the revival and introduction of this practice, *that honor I claim*; and, inasmuch as some of my own countrymen, from its first introduction, have labored anxiously, and are yet striving, to rob me of this honor, I may be excused, I trust, for calling in here the testimony generously granted by foreign writers, in my favor:

"Having thus given an ample analysis of Dr. Green's work," say the editors of the *British and Foreign Medical Review*, "it remains with us to propound briefly a critical estimate of its value. * * * * It would appear, from various testifying documents, which the author has collected in an Appendix, that his statement as to the practicability and safety of topical medication in laryngeal disease, was met by some of his countrymen by a sneering incredulity. There can be no doubt, however, that this part of the question is set entirely at rest; nor does the previous publication of the methods used by Bell, Vance, and Trousseau and Belloc, detract at all from the merit due to Dr. Green, for his persevering and successful attempts to render the treatment of some forms of pulmonary diseases more effectual and certain.

"We have adopted this mode of treatment recommended by him, and can corroborate his statements as to its great value. Cases of pulmonary affection have, in our hands, been brought to a satisfactory termination, which we are quite sure, under the treatment ordinarily adopted, would have terminated fatally; and we remember individuals whose cases terminated fatally, who (we feel equally certain) need not have died, at least of that disease which cut them off. This much is due to Dr. Green."^{*}

In a review of the same work, in the "London Medical Gazette," after an allusion to what others have accomplished in this branch of practical medicine, the reviewer says: "The French pathologists may have anticipated the author, in some degree, by the local application of the nitrate of silver to the fauces; but Dr. Green was the first to extend its use successfully to parts *below the epiglottis*, in various inflammatory diseases of the vocal organs."[†]

* British and Foreign Medical Review. Vol. XXIV, p. 504.

† London Medical Gazette, Vol. IX, p. 1065.

In the "Dublin Quarterly Journal of Medical Science," the subject is also discussed, and the following conclusion announced. "MM. Trousseau and Belloc employed a solution of the strength of two drachms to the ounce, or sometimes to the half-ounce, of distilled water. Their method of applying it was either by means of a small silver syringe, with a long, curved tube, which could be introduced beyond the epiglottis, or by saturating a bit of sponge, attached to a rod of whalebone, which, being pressed firmly against the back of the pharynx, discharges some of the solution into the glottis, principally by the involuntary effort of deglutition which it excites. This latter method we have ourselves frequently used with much success. But Dr. Green has found another method of applying the solution to the laryngeal mucous membrane, so simple and so efficacious, that, as we before remarked, he has been induced to publish this volume upon its merits.

* * * * *

We shall only say, that we are fully convinced of the originality of observation displayed by our author, and of the perfect truth of the statements contained in his Treatise."*

It is well known that Professor Bennett, of the Edinburgh University, has adopted extensively, topical medication in the treatment of laryngeal and kindred diseases, in the Royal Infirmary and in his private practice. In his clinical lectures on the subject, published in the "Edinburgh Monthly Journal of Medical Science," he remarks: "This practice, introduced by Dr. Horace Green, of New York, consists in the direct application of a solution of nitrate of silver to the interior of the larynx and trachea. Numerous attempts had been made, with more or less success, by Sir C. Bell, Mr. Vance, Mr. Cusack, and MM. Trousseau and Belloc, to carry this practice into effect; and the results obtained, even by their imperfect efforts, exhibited the great advantages which were to be derived from it, in the treatment of laryngeal diseases. Now, thanks to Dr. Green, we can with safety and certainty apply various solutions directly to the parts affected."

In reporting the above clinical lectures, the history of two cases of interest are given by Professor Bennett, in the treatment of which he saw, for the first time, the application of caustic to the interior of the larynx and trachea. It occurred in the summer of 1851, when, on a visit to Edinburgh, I was invited by Dr. Bennett to visit the Royal Infirmary, and to perform the operation on several patients in his ward, who were suffering from *laryngeal phthisis*. I quote these cases as abbreviated in Braithwaite's Retrospect.† The first case alluded to, was one of an aggravated form of chronic laryngitis: "On the 30th of June, notwithstanding the assiduous use of astringent gargles, occasional sponging of the fauces with solution of

* The Dublin Quarterly Journal of Medical Science, Vol. IV, p. 441.

† No. XXIV., page 99.

highest respect. By his professional labors, and through his many important contributions to practical medicine, he has gained a distinguished reputation, not only in his own country but throughout Europe and America. During a visit to Paris, two years ago, I had an opportunity, through his friend Dr. Simpson, of Edinburgh, to make the acquaintance of Professor Trousseau. We had several conversations on this subject of topical medication. In answer to his inquiries, I gave him the full particulars of my own operations, in which he appeared much interested—particularly so when I related to him what had been accomplished in this country in the treatment of membranous croup by cauterization. In this connection, I gave him my reasons for *not* performing tracheotomy under the circumstances in which he has been accustomed to operate; that, for many years, I had employed cauterization of the larynx in any and every stage of the disease, by means of which others, as well as myself, had saved, I believed, many lives; and that I had come to the conclusion, that if *this* operation failed, it would be useless to employ tracheotomy. He desired me to give him the size, shape, &c. of the instrument I employed, and assured me that he would attempt the operation in the first case of croup that should occur in his practice.

After my return home, during the last year, M. Trousseau obtained, through Prof. T. Childs, of Pittsfield, who was then in Paris, half a dozen of my sponge-probangs, and the bent spatula which I employ for depressing the tongue. A few months since, I received from Dr. Trousseau a very kind letter; and as its statements are conclusive on one point in this matter, I shall take the liberty of giving the concluding portion of it.

* * * “J’ai reçu aussi, et j’ai lu avec une grande attention, votre ouvrage sur la cauterization de l’intérieur du larynx. Avec l’abaisse-langue que vous avez imaginé, et dont M. le Dr. Child m’a donné le modèle, on peut aisément voir l’épiglotte; mais j’éprouve toujours beaucoup de difficulté à pénétrer jusqu’aux cordes vocales. Il y a aussi quelques uns de mes malades qui ont éprouvé des accès de suffocation effrayants, quoique j’eusse agi, suivant vos recommandations, avec une extrême rapidité.

“Au demeurant, grâce à votre excellent abaisse-langue, j’obtiens aujourd’hui, par la medication topique, des succès qui étaient bien plus rares auparavant.

“Agréez, monsieur, et honorable confrère, l’assurance de mes sentiments les plus distingués.

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these gentlemen and their associates, at the wards of this charity, and perform in their presence the operation of cauterizing the interior of the larynx and trachea. This I did on two different occasions, and performed the operation on many patients in the presence of the medical staff of this institution, and other distinguished members of the profession.

In Dr. Cotton's excellent work, since published, on Consumption, the author candidly admits his previous unbelief in, and present changed views with regard to, the practicability or propriety of topical medication to the mucous membrane of the respiratory passages. The admission is honorable to himself, and worthy of imitation. "I should here remark," observes Dr. Cotton, "that my own views upon this subject differ from those I formerly held, and have even expressed; and that I owe this change to the kindness of Dr. Horace Green, of New York, the justly celebrated advocate of this treatment, who, during a recent visit to our metropolis, convinced myself and others, not only of the possibility, but of the safety and usefulness of the practice.

"I had long been in the habit of using a solution of nitrate of silver to the pharynx and upper surface of the epiglottis, by means of a soft brush.
* * * But I had never ventured to apply any thing directly to the larynx itself—not from any doubt as to its possibility, but from misgivings as to its effects, and apprehension of its danger. For some months past, however, I have done so extensively in cases of chronic laryngitis, whether idiopathic or tubercular, and very frequently with marked success. * * * I have known the voice regained, the irritable cough removed, and the tenderness and difficulty of swallowing dissipated entirely by it; indeed, I think we might also speak of its *curative* effects (so far, at least, as the larynx is concerned) in some very early cases."*

In conclusion, I beg to be permitted to give the testimony of M. Trousseau himself on this question; the man to whom of all others many of my own countrymen (for Dr. Adams is not alone in this matter) have labored, ever since the issue of my treatise, to give all the merit for the introduction and practice of topical medication.† For M. Trousseau I entertain the

* "The Nature, Symptoms, and Treatment of Consumption;" being the Essay to which was awarded the Fothergillian Gold Medal of the Medical Society of London. By Richard Payne Cotton, M. D., Member of the Royal College of Physicians, London, &c., pp. 236-7.

† In proof of this, I would refer the reader to the notices of my works on "Diseases of the Air Passages," and on "Membranous Croup," by American reviewers; particularly to the reviews of these treatises by a writer in the "American Journal of Medical Sciences." Of the character of these reviews in this Journal, with regard to *fairness, impartiality, and justice*, as well as of the merit or demerit of the works reviewed, I am quite willing to leave the candid and unprejudiced portion of the profession to judge.

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This *exposé* of the unjust and unprofessional course pursued by Dr. Adams, has been made by me, I confess, with great reluctance. Had Dr. A. confined himself, in his characteristic labors, as he and his coadjutors have done heretofore (for this is by no means the first time—as hundreds of the profession well know—that he and they have consorted together for the professional injury of others), to their own country, and among their own countrymen, I should have suffered these things, for very obvious reasons, as I have done through many years, to pass altogether unnoticed. But “John G. Adams” in Paris, with the honorable suffix to his name of “*ancien Secrétaire de l’Académie de Médecine*,” etc., when he presents himself with his cards of introduction to Trousseau, or Chomel, or Louis, or Robert, is, in their estimation, a different man from *Dr. Adams, of New York*, and possesses power under such circumstances, if disposed, to effect altogether more mischief than at home.

For the honor of American physicians, as well as to protect myself, I have endeavored to expose, and would protest against, these efforts made to interrupt those pleasant relations which have been established between the members of the profession abroad and those of our own country.

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A FEW REMARKS
ABOUT
SICK CHILDREN IN NEW YORK,
AND THE
NECESSITY OF A HOSPITAL
FOR THEM.

BY PHILOPEDOS,
An Ex-Dispensary Doctor.

NEW YORK:
WILLIAM C. BRYANT & CO., PRINTERS, 18 NASSAU STREET

1852.

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REMARKS.

The population of the city of New York in the year 1850, was 515,392, and the number of deaths was *one* in *thirty-three*. The same census gives *one* in *sixty-seven* as the proportion of the deaths to the living population in the other parts of the State. This difference in the rate of mortality, in the city and country, appears to indicate the prevalence of more health, and a far better prospect of longevity among the inhabitants of the rural parts of the State; and the difference between the two is a matter of surprise, and, by many, can scarcely be credited. It is, however, perfectly accurate, and, so far as the city is concerned, receives its corroboration from the report of the City Inspector for that year. This document informs us that there were 15,377 deaths during that period, which is 1 in 33,52. It also supplies another species of information of considerable importance, in explanation of the difference, and which can be obtained by referring to the table containing the *ages* of the deceased. It will there be seen that 8,052, or 61 per cent. of these deaths, were children under the age of ten years. In the year 1851 there were 22,024 deaths reported; of which number 11,856, or 54 per cent., were children at the same ages. During the seven weeks of the present year (1852) ending on the 28th of August, there were reported 3,712 deaths, of which number there were 2,480, or 66. 81 per cent. children under the age of ten years. On examining also these records for a number of years past, the fact of the immense mortality among them, is one of the most prominent there mentioned; 49 per cent. being the average number for a period of sixteen years. It is evident, therefore, that the excess in the number of deaths for the city, is made up exclusively of young children, to an extent that is truly alarming.

Not only is this mortality excessive, but it appears also to have been upon the increase. This will appear, by comparing the number of deaths with the population at the different census periods; thus, in 1835, the deaths were as 1 in 46. 87; in 1840, 1 in 39. 74; in 1845, 1 in 37. 55, and in 1850, 1 in 33. 52.

The causes of this fatality among the younger portion of the population, must be referred to the peculiar condition in which people live in cities, acting especially upon such as are most liable to receive physical impressions. This condition is that of crowding a vast number of people in comparatively a small space, and the effect is the deterioration of the air that they breathe.

The change thus produced is effected both by the consumption of the oxygen by respiration, and by the emanations from the bodies of the living; both imparting a poisonous influence to confined and badly ventilated residences.

The first-mentioned change is a chemical one, and consists of depriving the air, by breathing, of its life-imparting constituents, and leaving in its place carbonic acid gas and nitrogen, both *poisons* when taken into the lungs. The other alteration is an admixture with the air of the emanations which arise from the bodies of the healthy and diseased. These emanations escape with the insensible perspiration. In a state of health there is nothing peculiar in this fluid, except that it possesses a slight animal odor; but when collected and kept close in a warm place, it becomes excessively offensive. The perspiration, in disease, has various odors, and even colors, as red, saffron, black or blue; all of which shows that it is a process of *depuration* or cleansing; and that to the extent of twenty-eight ounces in twenty-four hours. It cannot, therefore, be otherwise than injurious to be breathing an atmosphere laden with substances thrown from the body because they are injurious, and not proper to be retained; thus another *poison* is taken into the system by breathing close and contaminated air. Is it any wonder that children, who require every thing they receive into the body to be of the purest quality, should be the greatest sufferers in excessively crowded habitations?

In a city like ours, the air, in over-crowded houses, must, from these causes, become exceedingly impure. In summer, such a state of living becomes almost insupportable, and in some of the poorer parts, the doors, windows and steps may be seen in the evening crowded with people endeavoring instinctively to obtain a little fresh air.

As was just remarked, children suffer most from this crowded mode of living, and it is the children of the extremely poor that die in such frightful numbers and swell so enormously our city bills of mortality.

Many persons are ignorant of the large number of people that are in one house among the poor. The average number in an ordinary sized house is about fifty; and it is by no means unusual to find six permanent occupants of one room, and it is known to have reached the number of twenty.

All this is bad enough where the houses stand side by side fronting the

street with some space in the rear; but it is inconceivably worse where every available spot of ground is occupied by some kind of building, and where double or treble the proper number are crowded together with barely space enough among them to reach the different entrances.

There are places known as courts where the lot of ground is built on three sides—that fronting the street being left open. The air in these places cannot be otherwise than confined and consequently impure; but it cannot be compared with that which is found in other places, where every inch of ground of what was formerly the yard has been successively built upon, leaving hardly a breathing spot, with the exception of the alley used in common, and which opens into the street.

There are others which, although built more systematically, are equally bad for ventilation. These houses are erected on the front, rear, and ends of several lots, leaving a yard in common in the form of a parallelogram with a group of out houses in the centre; the entrance to this yard, by which access is had to the rear buildings, is through an arched way in the front row.

When you have fairly entered, you observe that the houses in both rows face inwards, while the front row also faces the street. The rear row will probably be built against a similar row, so that ventilation by means of opposite windows is impossible. They are so small as not to allow of stairs on the inside, but the ascent is made by means of stairs from the outside leading to a gallery passing in front of each story. Each room has the number over the door and opens on the gallery, and there being no other opening except a small window at the side of the door, the air can only be changed by its ascending the chimney. In a hot summer's night these rooms are unendurably stifling. I have been in a court like this in the afternoon of a hot day, and have stationed myself in the upper gallery to take a view of the scene below. The whole yard literally swarmed with children of every age, and numbers of people were crowded at the doors and windows of the row before me to obtain the benefit of what little fresh air there could be found in such a place. No ordinary wind that blows could ever reach the enclosure, but dead stagnation reigns from month to month without any mitigation. The confused hum peculiar to a large assemblage of people proved how vast were the numbers confined in the place.

In some places like this, hogs and cows are kept, and the moisture from the whole enclosure is offensive at all times; but in rainy weather it is unfit even for hogs to live in. Sometimes the yard is rendered, by the filth and moisture, almost impassable, and has been covered over with boards, preventing any evaporation, while every tread presses up a green, offensive, muddy fluid between the boards.

There are numerous confined places known by the general name of courts ; this, however, will suffice to give an idea of the nature of such places, their common condition being that of an absence of a sufficiency of air for the requirements of the body, rendering the inhabitants predisposed to the action of pestilential influences in their most malignant form, when pestilential diseases prevail.

A more particular sketch, however, may be necessary to give the reader some idea of the needs of those who suffer most in such habitations, and for whom all must feel some interest.

Go with me, therefore, kind reader, on a visit to some of my dispensary patients. The scenes will of necessity be for you but the pictures of the imagination ; for me they will be the strong reminiscences of the truthful scenes of years now long past.

Here is my memorandum. In addition to the name and number of the street, it has this observation, "*Chd. 3 f. f.*," which, translated into English, means "child, 3d floor, front." Here it is : an old house, the "*3 f. f.*," proves to be the upper floor of the building, next to the roof. There is no plastering, and the sun's rays streaming upon it, produces a great intensity of heat, which rarifies the air beneath it, while from the construction of the house, and from its situation, closely surrounded by others, there can be no direct passage of air from without ; what little arrives, there comes through the midst of a score or two of people below. Both these causes so affect the air as to make it impossible to receive at each inspiration a sufficiency of oxygen to satisfy the hungry lungs ; we feel that we are on an allowance, and are suffering lassitude and even faintness, and that if such a state of prostration should continue, we could not retain vital energy enough to resist the invasion of disease.

There are three little people sweltering in this air, for whom I am expected to prescribe. To direct any kind of medicine to be given to them is positively absurd ; it is disheartening to visit such a place, and to be required to relieve physical suffering when the first and indispensable pabulum of life is wanting. We must leave them for the present, and endeavor, before our next visit, to devise something that, professionally speaking, "will fulfil the indication."

Let us change the scene from the heat of our tropical summer to the intensity of our winter's cold. "*3 r. row b.*," which means "3d house, rotten row-basement." Every city has its "rotten row," and doubtless dozens of them. It is a favorite term, and a highly expressive one. The one I now refer to, stood—if that term is a suitable one—precisely where the building of the Northern Dispensary now stands. It was a row of very old houses which cannot be better described than it is by the name that was given to it.

When it rained hard, the cellars were overflowed with water. The numerous crevices and openings caused but little difference in the winter's temperature outside or inside of some inhabited parts of "Rotten Row." One of these is the cellar which we are now to visit. There, upon a pile of shavings gathered for fuel, portions of which adhere in hard frozen lumps, lies the mother of the child I am to prescribe for. She is dead drunk. One of the children is clambering over the mother, making vain attempts to awake her. The sick child, a neighbor informs me, has been taken into temporary charge by her, as it appeared to be perishing with cold. The natural instinct to render assistance to the helpless, or perhaps the exercise of the Christian principal of benevolence, has been exerted to relieve this little child from present suffering.

I have often met with self-sacrifice and instances of kindness towards the sick and destitute, on the part of those no less destitute than the objects of their solicitude; watching and nursing them at every interval that could be spared from the duties required in their own families: while it must be admitted that many instances also of brutal selfishness are exhibited—the direct effects of poverty, ignorance and degradation. Human nature, however, is the same in every class, and if selfishness is presented to us with rough moroseness, that shocks the sensitive mind by one class, it is at least no worse in its effects than when influenced by the conventional usages of more refined life. Selfishness, wherever found, can produce no other effects than unhappiness. If mercy, in the language of the immortal poet

"Is twice blessed ;

Blessing him that gives, and him that takes,"

So may selfishness, that scarce can brook another's wish, have its twofold curse; but worse, far worse for him who suffers it to blight the germs of kindness in his heart, than for him who is left by it in neglect—perchance in sorrow and in suffering.

Let us visit "Rotten Row" in summer. We will enter again one of these dilapidated cellars. Why, the floor is covered with water! True, it rained hard last night, and these places are generally so after a hard rain: the water is only about half an inch in depth, and you observe that bricks are placed at convenient distances for stepping to the bedside, that the feet may not get wet. It is of very little importance to know what form of disease it is that we see in the bed, or what description of person lies prostrated by it; whether the robust man or feeble woman—the aged, whose day is rapidly closing, or the young child, whose morning has but just dawned—all present a hopeless task for him who would relieve them by the resources of the medical art.

I once knew a pool of water, that was in an area, burst through the foundation of a house, and empty itself into a room where people were sleeping, carrying with it a quantity of mud and sand ; it is even said that some have in this way been drowned. Besides the heavy rains that overflow these places, the water not unfrequently gets into them by the tide rising, and people living in them have barely escaped with their lives. In one instance, on the extraordinary rise of the tide in a cellar in Washington street, it disturbed *thirteen* people, four adults, and nine children, during their sleep.*

With or without excessive rains or unusually high tides, these places are always damp, and are thereby a continued source of various inflammatory diseases, rendered more complicated and unmanageable by the positive deterioration of the air from want of ventilation ; indeed, the occupants of cellars are always sick in a never-ending rotation. Sickness among the poor is always great, and in these damp and badly-ventilated places is more protracted, besides being more fatal, especially among children, than above ground. More than two-thirds suffer some lingering disease, existing among such as are almost constantly exposed to the causes that are always in action in such places, as women and children. They pass most of their time, both day and night, in the confined air of their abodes, while the men pass the day at their usual out-door work, and are under "*home influences*" only at night. In many of these places the floors are rotten, and impart an odor peculiar to decaying wood, while the whole has a chilly feeling, and yields a damp earthy odor, strongly suggestive of the odor of a vault. It cannot, therefore, be a subject for wonder that, in proportion to the number of inhabitants, the demands for medical services should be much more numerous by the inhabitants of cellars than by others.†

Another memorandum indicates that I have been desired to call at No. — — — street, "*ch'd. f. b.*," which means "child, front basement." Here is the house. The door is locked. Knock. No response. Knock again. Still no notice is taken of us ; it is evident that we can not gain admittance. We will not go away yet. I have had some experience in these matters before. Sick people are not in the habit of being removed

* "One cellar was reported by the police to be occupied as a sleeping apartment by 39 persons ! In another the tide had risen so high that it was necessary to approach the bedside of a patient by means of a plank, which was laid from one stool to another ; while the dead body of an infant was actually *sailing* about the room in its coffin !" — (*Official Report on the Cholera in Boston*, 1849.)

† The number of persons inhabiting cellars in the city of New York, who have no other room, according to a census taken by the Chief of the Police in March, 1850, was 18,456.

when the doctor is sent for. Yonder is a little window through which we may look, and perhaps learn something of the state of things within, and of the reason wherefore we could not be admitted. Let us look into the apartment. Every thing is rather obscure, but as the eye becomes accustomed to the gloom, objects gradually appear with more distinctness. There are evidently two children in that room; one lying on a bed, and the other sitting on the floor amusing itself with some uncouth playthings. Now the condition of things is better understood. The mother has left these children alone, while she has gone to earn a trifle by a day's work. This is the reason also that a request, of which I took no memorandum, was left that I would call at a designated hour, at which time she doubtless left her work, and went home to see her little ones and meet the doctor. My engagements not permitting me to call at the time desired, she had again locked them in and had gone to finish her day's work. We can see things in the room a little more clearly; the little one on the bed has a highly flushed cheek, and is, no doubt, burning with fever, while there is no one—nor will there be for many hours—even to give it a drink of water. God help you, my poor little creature, in your loneliness and suffering!

Still another memorandum to visit a cellar. This one is in a rear building. The house is one of those that has been built on the rear of a lot of ground, even after it would appear that every spot on it had already its house. It is completely hemmed in, and as we descend, observe how extremely dark it is. In addition to the want of ventilation so common to all such places, there is a remarkable absence of light. From the position of the room the rays of the sun have never reached it, and it appears doomed to uninterrupted murkiness and gloom. Notice the inmates, how pale they are! what a waxen, cadaverous complexion these children have! the very lips are pale and the whole face is puffy and destitute of expression. The father and one child died about a month since, and the entire family appear to have been always sick.

It may appear strange to some readers to assert that the absence of light has had something to do with all this; it is at least an important ingredient in the subterranean death-mixture. I have known some positive effects of the mere absence of light in the gloomy apartment of the hypochondriac, and abundantly proved to be from that cause. I have read how light—the sun's glorious light—was regarded as an emanation from a god; and Phœbus Apollo was worshipped as the dispenser of health and happiness. The fable of Apollo slaying the serpent Python, is but an allegorical description of the scattering of the noxious vapours that arose after a flood, by the sun's rays. I remember also reading that it was a practice among some of the old Romans, to denude themselves and bathe

in the solar light on the house-top ; or, as Pliny says, to take a *solaria*, or solar air-bath.

Light, plenty of it, appears to exercise a great influence over the physiological condition of all living things, in the production of greater vigor. The effects are visible to us in the blanching and feebleness of vegetable sprouts that have grown in the dark—in the contrast between the upper and under parts of fishes, particularly such as swim close to the bottom ; the under being white and the upper part brown. So with the fur of quadrupeds, that which covers the under portions of the body is of a more delicate texture and of a whiter color than the rest, where it is constantly exposed to light. In some of the polar animals, the entire coat changes to a white during the long night of winter. I have also read that travellers refer to the long days of a Norwegian summer the unusual amount of vigor they experience during that season. Physicians also tell us that sick people in the dark portions of the wards of an hospital are likely to remain longer sick than such as are more favorably situated with regard to light—that miners who pass a large portion of their time in the dark chambers of the earth, suffer more from the absence of light and have more sickness than is likely to arise from mere absence of ventilation alone, and that the children of miners and also of such as inhabit dark courts and cellars, are apt to be deformed and ailing. I have myself observed that the young inmates of cellars are languid and feeble, with the circulation slow, the skin cool and pale, and of a reptile feel.

Go with me now, after the lapse of a fortnight, to the New York Hospital, whither these children with their mother were sent. I must repeat the remark that this is no picture drawn by the imagination, but a simple truth. They begin to look as children should look. The first tinges of the ruddy hue of health have already appeared. They are cheerful and playful. What has brought about all this change ? Not a particle of medicine has been given, but they have been placed in a large, light, and well-ventilated ward, while they have been supplied with ordinary healthy nourishment.

We may form an idea from this sketch of the causes of some of the sufferings of the poor, and learn also that those who have the least to do with the production of these causes and with any arrangement necessary for their physical comfort—such as can have no thought whatever upon the subject—are the principal victims.

It is certainly a remarkable fact, that those who could have had no agency whatever in causing the evils they suffer, should be among those that are first and the most grievously punished. We have, however, nothing to do with this as a subject for discussion, but can only consider

the facts as they are presented to us, and to observe the action of their causes, that the knowledge thus acquired may be available for the prevention and removal of the physical evils to which our race is continually exposed. It may not, however, be out of place to remark that the laws controlling our physical are as imperative as those which govern our moral condition, with this difference, that the latter takes cognizance of our individual will, and as individuals we are liable to be punished for voluntary disobedience. In the former the penalty reaches us whether the transgressions are voluntary or not; the physical penalty following a violation of the physical law with more unremitting certainty than chastening punishment follows a violation of the moral law. The deprivation of necessary food or air, or any other violation of the law in question no sooner exists, than a certain penalty begins and affects all within the reach of the law. When we see therefore the utterly helpless suffering from these causes, the responsibility becomes the greater on the part of those who have it in their power to interfere for their relief. If the infliction of these sufferings is independent of their agency, so is also their relief. Others must come to their assistance, and, as far as it is in their power, modify or change the circumstances which are continually in action to produce a certain result.

Among the most prominent of the violations of these laws is excessive crowding in all cities. It is an evil never to be removed, but may be much modified and controlled. It has been remedied to a certain extent by providing, during the existence of severe pestilences, retreats for the poor that are in health and hospitals for such as are sick. The sick children of the poor are so numerous—and with almost a never-ending pestilence among them—that it is proposed to establish a permanent hospital as one of the necessary measures for their relief.

For the children of the poor abundant provision is made for the peculiar wants attendant upon their condition in life. The juvenile criminal is sought that he may be reclaimed ere the habit of vice shall render him incapable of moral renovation. Schools are freely opened for the reception of all children, and in such numbers that no one, however poor, need grow up to adult age ignorant of the rudiments of knowledge; and instruction, extending even to literary and scientific accomplishment, is offered to all. Asylums for the utterly destitute offer their protection to multitudes of the helpless offspring of the city pauper, while thousands of parentless children are tenderly carried through that period of life when their very ignorance of a parent's care adds a touching interest to their claims for nurture, for protection and for guidance. Under all circumstances of ordinary destitution is the child cared for by some special method adapted to his needs, with the single exception of sickness.

No assylum exclusively devoted to his reception when sick exists in our city, and for want of such how many and how multiform are the instances of suffering in our large population, no one can surmise. The instances above cited are but isolated cases, and can scarcely be regarded as anything more than types of a few forms of destitution in sickness.

It must be evident to all who will reflect upon the large amount of sickness there is among the children of the poor in our city, that hospital accommodations for them are among its most urgent wants. In the dwellings of the very poor there is almost always more or less absence of everything necessary for the ordinary relief of the sick, and especially of the unremitting attention that is needed by them. The necessity of constant occupation to obtain the means of existence, precludes the possibility, in a large number of instances, of devoting any time to the requirements of the sick; and it is from this want of attendance, next to want of pure air, that children suffer most. Often too, all the care and watchfulness bestowed may be rendered useless by the absence of the most necessary accommodations. This may be tolerated during health, but in sickness it is not only distressing, but positively injurious. For those who have the necessary comforts for the sick, or who have time that they may bestow upon their families, when they most require it, dispensary attendance is sufficient for their wants in sickness; but when it is known that many children are absolutely destitute of all these—indispensable as they are—the necessity of providing well-ventilated accommodations is evident; a place where all the wants of the sick may be supplied, and especially when personal care must form an essential part of the arrangement:—a need only to be supplied by the establishment of a well-organized hospital.

If it is thought by any that such children as may require removal from their homes could be accommodated in the hospitals already established, it will be necessary to state that there are not hospitals enough for the ordinary wants of our city, now containing more than half a million of inhabitants. Among so large a number of people, many more hospitals than now exist could be filled with distinct classes, either of people or of diseases. Where sickness among children exceeds to so great a degree sickness among adults, as it is found to do in New York, there will always be a sufficient number of applicants to fill any number of hospitals that will be established for their exclusive use.

The need, also, of a special hospital for children, is evident when it is considered that a large number is to be provided for, and that there should be an adaptation to the wants of a particular class of patients, who require a peculiar mode of management, and attendants *adapted* exclusively to them.

Some of the principal cities of Europe have, for a number of years, had hospitals organized exclusively for children; increased experience has proved their importance, and led to their establishment more recently in many others; so that, at the present time, most of the larger cities have hospitals expressly devoted to this class of patients.

There can not be found a city in the world where a similar establishment is needed more than in the city of New York. For to the great number of permanent poor residents always in a city, there is to be added the peculiarity of an enormous transient population. The children of the latter suffer when sick, in addition to the ordinary privations, all the distressing evils of miserable, filthy lodgings, and of other temporary accommodations.

After a careful consideration of the truths here presented, surely no one can hesitate to do what is in his power to assist in the establishment and support of a Child's Hospital in New York.

In suggesting the title of "ST. NICHOLAS' HOSPITAL" for the proposed institution, the writer is more influenced by its appropriateness than by any attachment to the name, which, in a native of New York, might be pardoned—blended as is this name with many pleasant reminiscences.

Strange stories have been related to us in childhood of midnight visits at the Holy Season; and a poet of our own—*Tam eruditione claro, quam virtute venerando*—has sung to us of one of these visits, and told us of tiny reindeer steeds with their tiny wain that bore gifts, kind gifts of affection, during the hours of slumber. These stories are not the fragments of an imaginary fairy tale, nor the distortion of some pagan superstitious rite; nor are the gifts the doings of wicked witchcraft: at such a time

"No fairy takes, nor witch hath power to charm,
So hallowed and so gracious is the time."

Although a departure from the simplicity of truth, the legend is of Christian origin, and came from the workings of Christian benevolence. The benevolent character of the pious Bishop of Myra shewed itself mostly in his tender care for children, and the traditionary history of his affection for the young still lingers among us in the secret and mysterious gifts of "Sint Nicholaas goed heilig man."



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ON THE TREATMENT
OF
PUERPERAL CONVULSIONS.

By B. FORDYCE BARKER, M. D.

READ DEC. 5, 1855.

IN the following paper, an attempt is made to formularize the treatment of puerperal convulsions, based on the pathology, as accepted in the present state of science. While the semeiology of this fearful complication of parturition has been familiar to the profession from the earliest ages of medicine, its pathology has only very recently been understood. Even M'Clintock and Hardy, who are among the latest of our standard authors on "Midwifery and the Diseases of the Puerperal State," say, "The pathology of puerperal convulsions, as well as of the other diseases in the nosological class to which it belongs, is a subject upon which we are in almost complete ignorance."

Hence its treatment has been purely empirical. The recorded statistics show that few diseases have been treated with so little success; 32 per cent. proving fatal where the attack has occurred before and during labor, and 22 per

cent. where the convulsions have come on after labor.* There is no complication of labor which has been attended with such fearful mortality.

But the experimental researches of Majendie, Flourens, Marshal Hall, and other investigators, among whom our own Dalton should be mentioned as one of the most zealous and successful laborers, have entirely revolutionized the physiology of the nervous system. The pathology of the nervous system is consequently a new science; and to Dr. Tyler Smith, in my estimation, are we more indebted than to any other author, for our advance in the right direction in developing the application of the new discoveries, to explain the phenomenon of the disease of the nervous system now under consideration.

We shall, therefore, first, briefly review the pathology of puerperal convulsions. All convulsions arise from some irri-

*	Total.	Before & during Labor.	Recov'd.	Died.	After Labor.	Recov'd.	Died.
Mauriceau,	45	29	13	16	16	11	5
Mad. La Chapelle,	27	23	16	7	4	2	2
Desjardin,	7	5	5			2	
Velpeau,	21	12	8	4	9	5	
Smellie,	10	10	7	3			4
T. Clarke,	19	17	12	5	2	2	
Lever,	14	12	8	4	2	2	
Robert Lee,	54	46	31	15	8	7	1
Ramsbotham,	25	22	14	8	3	3	
Collins,	30	28	23	5	2	2	
McClintock & Hardy,	13	10	7	3	3	3	
TOTAL	265	214	144	70	51	39	12

Authors have differed as to the comparative mortality of convulsions occurring before and during labor, and those coming on after delivery. Mauriceau, Velpeau, Dugès, Nægele, Churchill, Murphy, &c., regard those cases which come on after delivery as much more amenable to treatment than those which occur before and during labor; while Smellie, Astruc, Tissot, Ramsbotham, and some others, hold a contrary opinion. The table I have given above shows that 32 per cent. of those cases occurring before and during labor proved fatal, while only 22 per cent. died where the convulsions came on after delivery.—*From an article by the writer, on the "Use of Chloroform in Puerperal Convulsions," N. Y. Medical Times, Vol. 2, No. 9.*

tation of the true spinal system, which includes the spinal marrow within the theca vertebralis, the medulla oblongata, and the corpora quadrigemina. No irritation of the cerebral system—that is, of the brain and cerebellum and that part of the spinal chord which conveys sensation and voluntary motor power to and from the brain—will produce convulsions. Puerperal convulsions differ in certain essential characteristics from all other forms of convulsions, the difference resulting from some peculiar condition of the nervous system, developed during the periods of gestation, parturition, and lactation.

Puerperal convulsions have been regarded and described by many authors as being of an epileptic character. But, as Prof. Murphy has clearly pointed out, while epileptic and puerperal convulsions nearly agree in the form of attack, they differ in the manner of their incursion and in the ultimate course they take. To quote from Dr. Murphy, “Epilepsy agrees with puerperal convulsions in—

1. Violent convulsions of the voluntary and respiratory muscles ;

2. Total loss of consciousness ;

3. Lividity of features from apnœa ;

4. Followed by temporary coma.

They differ from each other in the following characters :

IN EPILEPSY,

1. An aura precedes the attack ;

2. There is no hissing expiration ;

3. Fits return periodically, at long intervals ;

4. The paroxysms are seldom fatal ;

5. Epileptics usually give evidence of some pre-existing constitutional derangement.

IN PUERPERAL CONVULSIONS,

1. Symptoms of cerebral congestion precede the attack ;

2. Hissing expiration very characteristic ;

3. Fits return in rapid succession ;

4. The paroxysms are often fatal ;

5. The healthiest women are often attacked.”

Other writers again, among the most prominent of whom is Dr. Ramsbotham, regard puerperal convulsions as being allied to apoplexy. But neither local congestion, nor the pressure on the brain resulting from serous or sanguineous effusion, will produce convulsions unless the pressure be directly on the medulla oblongata. Stupor, stertor, coma, or paralysis, may result from apoplexy, but not convulsions. Apoplexy not unfrequently *follows* puerperal convulsions, but does not cause them. As Dr. Marshall Hall has clearly shown, the convulsive fit has the effect of interrupting the circulation,—1st, by the direct pressure of the platysma myoides on the blood returning from the brain; 2d, by the spasm of the glottis impeding respiration, and preventing the passage of venous blood into the lungs; 3d, by the pressure on the venous circulation of the extremities, the blood by the spasmodic contractions of all the voluntary muscles being forced too rapidly forward into the great central trunks; 4th, by the increased pressure on the venous circulation in the uterus, in consequence of its more powerful contractions.

Puerperal convulsions also are caused by an exactly opposite condition from apoplexy, viz. anæmia. The final symptom in death from uterine hemorrhage, is ordinarily convulsion. In animals killed by blood-letting, convulsions occur during the act of dying. So where there is a deficiency of nutrient blood in the system, the exhaustion of the vital powers from labor may have the same effect in producing convulsions as extreme hemorrhage.

The causes of puerperal convulsions are divided by Dr. Tyler Smith into the *centric*—those that act directly upon the true spinal centers, and the *eccentric*—or those that act indirectly, through the agency of some distant organ, upon the spinal system.

The centric causes, are,—

1. Pressure upon the medulla oblongata from congestion, from coagula, or from serous effusion within the cranium;
2. Anæmia, or deficient nutrition of the spinal system;
3. Toxæmia, or an impure condition of the blood.

Dr. Tyler Smith also includes emotional causes; but irritation of the brain from shock can only act indirectly, or in a reflex manner.

The investigations of late years seem to prove that toxæmia is the most frequent of the direct causes. In a large proportion of cases, the albumen is drained from the blood in the urine, while the urea is left. Thus in nine cases, reported by Dr. Geo. T. Elliot, albuminuria existed in seven, and the experience of other observers is very nearly the same. The presence of urea in the blood in these cases, has been conclusively demonstrated.

In a recent case, occurring in the practice of Dr. Sayre, the blood, after standing, emitted a strong uric odor; and on evaporation, it was found loaded with the various crystals of urea.

The *eccentric* causes of puerperal convulsions are morbid excitation of the peripheral nerves of any of the vital organs, and irritation of the brain from shock. Their order of frequency is as follows, basing the order on a careful analysis of all the recorded cases of puerperal convulsions accessible to me.

1st. Irritation of the incident spinal nerves of the uterus and uterine passages;—as from distention from the liquor amnii; pressure of the fœtal head on the cervix uteri and vagina.

2d. Irritation of the incident spinal nerves of the rectum;—as from accumulation of fæces, &c.

3d. Irritation of the brain from shock, joy, terror, &c.

4th. Irritation of the gastric and intestinal branches of the pneumogastric nerve,—as from indigestible food, &c.

5th. Irritation of the incident spinal nerves of the bladder,—as from retention of urine.

In puerperal convulsions we have ordinarily a combination of one of the centric with one or more of the eccentric causes. Thus, irritation of the nerves of the uterus or of the uterine passages, the most common of the eccentric causes, will rarely produce convulsions unless there is either hyperæmia, anæmia, or toxæmia.

The above condensed exposition of the pathology of this disease, was deemed necessary in order to philosophically discuss the treatment.

TREATMENT.—*Prophylactic.*

McClintock and Hardy have well remarked, it is a most happy circumstance that, in a disease so justly dreaded and so full of danger as puerperal convulsions, there very generally exists some precursory symptoms of a sufficiently obvious character to lead one to anticipate its attack, and by the timely use of proper remedies, to prevent it altogether, or materially lessen its violence. Warnings of this kind are very seldom absent, although they are not always equally striking or manifest. The most constant of these premonitory symptoms are headache, varying in kind and degree, but generally of a dull, obtuse, or tensive character, and liable to be increased on exertion, particularly on stooping; an oedematous condition of the face and upper extremities, most visible soon after rising in the morning; a furred tongue, and sluggish state of the bowels. At the present day, every intelligent physician, on finding oedema of the face and hands would test the urine for albumen. If, in addition to the symptoms above enumerated, there were vertigo, tinnitus aurium, flashes of light before the eyes, *muscæ volitantes*, temporary loss of vision or of consciousness, flushed face, pain at the epigastrium, and an albuminous state of the urine, active prophylactic treatment should be at once commenced. If the patient is plethoric, or there is excited vascular action, venesection should be resorted to. The bowels should be freely evacuated, and kept in a soluble state. Indeed, all the depuratory functions ought, during gestation, to be increased; as the debris of the foetal, as well as the maternal system, have to be eliminated by the organs of the mother.

The following combination I have found of great value in these cases, after venesection, and, indeed, in some instances, as a substitute for blood-letting: \mathcal{R} James' powder, grs. iv; Soda bicarb., grs. iij; P. Digitalis, gr. j; M.—to be given

three times a day. In addition, the patient should be placed on a restricted diet, the bowels should be kept well opened, and she should be encouraged to take as much out-of-door exercise as possible.

Unfortunately, the medical attendant frequently does not see the patient until labor comes on. The signs which should then awaken the attention of the vigilant physician are, great restlessness and impatience, especially at each recurrence of pain, so that it is with great difficulty the patient can be restrained from flinging and tossing herself about; the manner is often changed, and unlike what is natural to her. "At other times, there will be temporary loss of consciousness, described by the nurse as a faint. Rigor and headache are frequent concomitants at this time, and the pulse is generally found to be uncommonly slow or considerably quickened." The physician should now carefully seek to ascertain the centric and eccentric causes of this condition, and to remove these by well-selected prophylactic measures. If there is evident hyperæmia, as shown by the strong, full, bounding pulse, venous turgescence of the face and neck, the hot skin, the flushed face, and the injected conjunctivæ, venesection should be promptly resorted to. But a careful discrimination should be exercised between the pulse of irritation, evidence only of nervous excitability, but generally accompanied with a hot skin, and flushed and turgescient face. If any of the eccentric causes are found to exist, as improper food in the stomach, constipation, or a distended bladder, they must be promptly removed. If there is indigestible food in the stomach, it should be removed by an emetic of sulphate of zinc. But an emetic should never be given in a threatened attack of puerperal convulsion, without absolute proof of its necessity, and rarely until after venesection; as the very act of vomiting might produce cerebral congestion. If the intestines are loaded, they should be at once freely evacuated. But the method of accomplishing this is a matter of the greatest importance. The irritation of the intestinal canal by drastic cathartics, may be a most powerful reflex excitant of convulsions. There is little difference between irritant drugs and irritant

fecal matter. A copious enema of warm soap and water, to which one or two ounces of castor oil may be added, acts almost immediately, without irritating the bowels. The state of the bladder should be carefully examined, and, if necessary, the catheter should be used. But the great source of reflex irritation causing the convulsions, is the uterus. The discriminating physician will readily decide when the liquor amnii should be evacuated by rupturing the membranes. This accomplishes for the uterus what an enema effects for the rectum. The distention of the organ is removed, diminishing its size and the quantity of blood circulating in it. But the great prophylactic measure, after all, is the use of *chloroform*. It has been supposed by many, that a tendency to cerebral congestion contraindicates the use of chloroform. But, on the contrary, sound reasoning and clinical experience conclusively show, that a tendency to cerebral congestion in parturition is a decided indication for the use of chloroform. By its use, the spasmodic contractions of all the voluntary muscles, which contribute so essentially to force the blood to the head, is overcome. The contraction of the platysma myoides, the pressure of which prevents the return of the blood from the head, is also overcome; and, lastly, the tendency to spasm of the glottis, which impedes respiration and prevents the passage of venous blood into the lungs, is prevented. After inhalation of chloroform, I have repeatedly seen the swollen, flushed face become calm and tranquil, the bounding, rapid pulse become soft and natural, the hot skin become cool, and the patient, who was before restless and irritable, tossing about from one side of the bed to the other during the recurrence of each pain, now lying in apparent sweet repose, while the uterine contractions were still going on with the utmost regularity. Were it not that this paper would thus be made unnecessarily tedious, the detail of several such cases might be given. But I doubt not, the experience of many members present will furnish numerous verifications of the above statement. Indeed, I may be permitted to state, that I have never known an attack of puerperal convulsions *during labor* where the precursory

phenomena were sufficiently evident to lead to the adoption of appropriate prophylactic treatment, and the patient has been brought under the influence of chloroform. In the patient of Dr. Sayre, the premonitory symptoms were very striking; but the danger was warded off by the use of chloroform during labor. Some hours after the labor terminated, and the use of the chloroform had been suspended, she had a very violent convulsion, which left her in a state of coma. She was bled very largely; but the stertorous breathing continued, with a constant tendency to convulsive movements. She was kept then under the influence of chloroform. Gradually her breathing became quiet, and the convulsive movements ceased. Opium was then principally relied upon for the subsequent treatment, and she made a perfect recovery. I have already mentioned that the blood in this case was loaded with urea.

Treatment of the attack.—The indications are, 1st. To remove the cause of the spinal irritation, whether it be centric or eccentric, or a combination of both. 2d. To allay the morbid irritability resulting in convulsions already developed. We shall consider the treatment under each of these heads. The centric causes, as has already been stated, are hyperæmia, toxæmia, and anæmia. We shall now consider the remedies which have been empirically sanctioned by the profession, and endeavor to ascertain their true value and appropriateness. 1st. Blood-letting—This is perhaps more universally adopted in the treatment of puerperal convulsions than any other remedy, and in a certain class of cases, it is the most important and effective, both to *cure* the spinal and to *prevent* cerebral disease. But there is no doubt that it is often most injurious in its effects, the loss of blood reproducing the convulsive seizures, acting as a centric cause. Let us attempt to determine the laws which should regulate the use of this measure. Where there is a great fullness of the vascular system, venesection is a powerful sedative of spinal action. Where the disease results from stimulation of the spinal system by excess of blood, or from the mechanical pressure of blood on that organ, or from counter-pressure of the distended brain upon the medulla

oblongata, bloodletting alone is often sufficient to subdue the disease. It, in these cases, is also equally important to preserve the brain from injury from the convulsion. The attack may, as in a manner before shown, cause such turgidity of the vessels of the head, as to result in fatal cerebral congestion, or serous or sanguineous effusion. But where there is an anæmic condition of the system, either pre-existing, or induced by hemorrhage during labor, blood-letting is a *stimulant* of spinal action, and would not only aggravate the convulsions, but greatly increase the danger to the brain from serous effusion. So also in those cases where it was clearly indicated in the first instance, its repetition may change its action from a sedative to a stimulant of spinal excitability. In hyperæmic convulsions, after one bleeding, sufficient to fully impress the system, vascular excitement may be kept down by the use of the tartrate of antimony, as proposed by Dr. Collins: Two grains of tart. antimonii dissolved in four ounces of water, to which is added one scruple of tinct. opii, to prevent diarrhea from following its use. A table spoonful of this mixture is given every half hour or hour, according to the urgency of the symptoms.

Where anæmia is the centric cause, exhausted nervous power, to use a somewhat paradoxical phrase, is the stimulant to spinal action. Here, opium in a full dose is the grand remedy. It restores nervous energy, and thus allays spinal irritability. There has been a great discrepancy of opinion among authors as to the propriety of using opium in the treatment of puerperal convulsions, some condemning its use in the strongest terms, while others highly extol it for this purpose. This difference of opinion has arisen from an imperfect understanding of the pathology of the disease, and a consequent lack of discrimination in the application of the remedy. Not only is opium a most valuable remedy in anæmic convulsions, but it is also frequently of great service in hyperæmic convulsions, after blood-letting. Nervous power has been exhausted, not only by the convulsive attack, but by the necessary blood-letting; and opium, in restoring nervous power, allays the spinal excitability.

It is unnecessary again to refer to the proper treatment for

the removal of the eccentric causes, as this has already been discussed in speaking of the prophylactic treatment, with one exception. The exception referred to, is where uterine irritation is the eccentric cause. This is no doubt the most frequent of all these causes. The propriety of *artificial delivery* often becomes a question of the gravest import. The principle should be, whenever artificial delivery can be effected with less irritation than would be produced by the continuance of the child in the parturient canal, it should be effected. Following this law, the decision must be based on the peculiar features of each individual case.

To fulfill the 2d indication, viz. to allay the spinal irritability already developed, we have no therapeutic agent at all comparable in efficiency with chloroform. For this purpose authors have recommended opium, cold affusion, counter-irritation, the various antispasmodics,—as camphor, ammonia, the ethers, musk, assafoetida, turpentine, &c.; but they are all feeble and inefficient as compared with the anæsthetics. Prof. Simpson has ingeniously suggested, that it may aid in removing one of the centric causes, viz. toxæmia.

He says, "If the blood-poison, which in albuminuria produces convulsions and coma, be, as Frerichs believes, carbonate of ammonia resulting from decomposition of urea, can we account for the power of chloroform in restraining and arresting, as it does, puerperal convulsions, upon the ground of its preventing this decomposition? The inhalation of chloroform produces, as various chemists have shown, a temporary diabetes, sugar appears in the urine, and hence probably also in the blood. The addition of a little sugar to urine *out of the body*, prevents for a time, the decomposition of its urea into carbonate of ammonia."

Whether future researches prove this hypothesis to be true or false, facts have been sufficiently accumulated to establish beyond controversy that the use of chloroform does restrain and arrest puerperal convulsions in a large proportion of cases. Some have been disappointed on finding that it did not have this effect in all instances. Where the convulsion is the

result of direct pressure on the medulla oblongata, or where the convulsion produces serous or sanguineous effusion, the chloroform can have no influence in controlling the fits. Where, then, there is *complete* coma, and especially when there is partial paralysis, no good effect can be anticipated from the use of chloroform.

No judicious man would think of using the chloroform in anæmic convulsions; as in allaying the spinal excitability, there would be great danger of overwhelming the nerves of organic life, and thus destroying the life of the patient. In hysterical convulsion, the chloroform is the sole therapeutic agent required.

It can hardly be necessary to allude to the importance of removing all emotional causes. The room should be darkened, and kept perfectly quiet; no conversation should be permitted; all signs of excitement should be absolutely banished from the room; and the physician should throughout the whole preserve a calm, undisturbed demeanor.

LECTURES
ON
UTERINE DISPLACEMENTS,

BY
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REPORTED BY B. T. ROATH, M. D.

LECTURE FIRST.

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Prolapsus of the Uterus.

GENTLEMEN :

I propose to study with you, previous to the commencement of our regular course on midwifery and diseases of women, the subject of Uterine Displacements. I have selected this subject, because it seems to me that the tendency, at the present day, is to overlook and neglect this important class of affections. It is overshadowed in the study of the inflammatory affections of this organ.

The great value and importance of the advances that have been made in the diagnosis and pathology of Uterine Disease, especially the inflammatory affections of this organ and its appendages, cannot be too highly estimated. But there is danger that old facts and old truths may be forgotten in the zealous pursuit of the new.

Displacement in some form or other is a very common affection. Indeed, some of the older writers regard it as the most frequent of all the chronic diseases to which women in civilized society are liable. The symptoms

which arise from displacements are very numerous, extremely variable, and frequently rebellious to treatment. These symptoms are such as are common to a great variety of different affections of the uterus. Thus, menorrhagia, dysmenorrhea, leucorrhea, bearing down pains, rectal and vesical tenesmus, etc., indicate that there is some uterine trouble; but none of these general symptoms are characteristic of any one particular affection. Professor Simpson, of Edinburgh, has well expressed the truth, that there are a great number of general symptoms which indicate that the uterus or its appendages are the seat of disease, but none which are pathognomonic of the particular disease, in the following proposition: "The general and local, functional symptoms of disease of the uterus are such as to enable us to localize, without enabling us to specialize, the exact existing affection of the organ." The medical man, therefore, who would diagnosticate inflammation or ulceration, or any other disease of the cervix on the one hand, or prolapsus or retroversion on the other, from the rational symptoms alone, would be utterly at fault. So then, in studying the subject of uterine displacement, we shall necessarily be obliged to study carefully, not only all the functional symptoms of uterine disease, but also all the signs derived from the improved methods of physical exploration.

In order to appreciate the symptoms arising from displacement of the uterus, we must be thoroughly acquainted with its normal position. I shall therefore

detain you, for a few moments, with a brief description of the uterus and its anatomical relations in the cavity of the pelvis.

[The anatomical description of the uterus and its relations we omit.—*Rep.*]

Any change of position by which the uterus loses its place in the centre of the pelvis, with the bladder before and the rectum behind it, and its long diameter corresponding with the axis of the brim, is a displacement. But some displacements are physiological, as the *descent* of the uterus in the early months of pregnancy, its *ascent* in the latter months.

The pathological displacements are—*prolapsus*, that is, a depression of the uterus below its natural level in the pelvis; *retroversion*, where the fundus falls below the promontory, down into the hollow of the sacrum, at the same time the cervix rises up behind the symphysis pubis; *anteversion*, where the fundus falls forward towards the pubis, the cervix being directed backwards towards the sacrum, the uterus, as in retroversion, occupying a transverse position in the pelvis. On the table before you, you see models representing each of these displacements, and also two other forms of displacement, in which the *cervix* retains its normal position, but the uterus is bent upon itself—backwards in the one, *retroflexion*—anteriorly in the other, *anteflexion*.

By far the most frequent variety of these displacements is prolapsus. It occurs most frequently in females beyond the middle age, who have borne children; but it

is also met with in all ages, and in virgins. Several instances are even reported of its occurrence in children. Every degree of variety may be met with, from the case where the uterus only settles down lower into the middle of the vagina, which enlarges to afford lodgment for it, to the case where it projects in the vulva, dragging the vagina with it, and forming a tumor between the thighs. Different terms have been used by authors to indicate these degrees, as *relaxation*, *delapsus*, *prolapsus*, *procidentia*, etc.; but these terms, as indicating the degree of descent, have only been productive of confusion, as the second degree is called *procidentia*, and the third degree *prolapsus* by some, while others call the second degree *prolapsus*, and the third, *procidentia*.

Nearly all authors make three degrees of prolapsus: 1st, where the uterus loses its proper level in the pelvis, the cervix resting on the perineum, the vaginal canal being somewhat shortened, but without any change in the direction of the uterine axis; 2d, where the uterus has sunk nearly or quite to the os externum, the upper half of the vagina being everted, like the finger of a glove with its top thrust inward, the axis of the uterus no longer corresponding with the axis of the brim, but being in the direction of the axis of the outlet of the pelvis; 3d, where there is complete protrusion of the uterus beyond the vulva, the uterine tumor being covered by the vagina, which is completely turned inside out.

Perhaps the least objectionable and most significant terms, as applied to these degrees of prolapsus, are

those employed by Dr. Herring, the translator of Boivin & Duges' work on Diseases of the Uterus. I shall, therefore, use the terms, *incipient-prolapsus*, *semi-prolapsus*, and *complete prolapsus*.

It is of great importance to understand the *causes* of prolapsus, in order to judge correctly as to its appropriate treatment. The principal causes assigned by authors are, 1st. Increased capacity and relaxation of the vagina; 2d. Weakness and undue expansion of the broad and round ligaments of the uterus; 3d. Augmentation of the volume and weight of the uterus.

There has been a great diversity of opinion among authors as to the causes. Lisfranc, Cruveilhier, Bennet, and others, are disposed to ascribe prolapsus solely to increase of weight of the uterus. Others refer it wholly to relaxation or diminished power of the suspensory ligaments of the uterus. On the other hand, most ingenious and conclusive arguments have been urged by different authors against each of these causes; so that, taking all their arguments together, there should be no such thing as prolapsus known. One believes that relaxation of the vagina cannot be a pathological cause of prolapsus, because the vagina is an organ susceptible of development to an almost indefinite extent, and can scarcely have been intended to maintain a degree of contractedness sufficient to enable it to sustain the uterus in any given position, and because the vagina is actually the most ample where, if the vagina is to support the uterus, it should be the most contracted. Others assert that relaxation of the uterine ligaments is the effect of prolapsus and not

its cause. Professor Burns and Dr. Ashwell, found by experiment on the dead body, that by cutting the ligaments the uterus could not be made to protrude without much force. Again, it is asserted by others, that there is frequently marked increased weight of the uterus, without any proportionate descent of the organ.

These objections may all hold good against any exclusive view as to the cause of prolapsus. But Vidal is undoubtedly correct in referring the causes to the three following orders:

1st. Those which refer to the state of the vagina and pelvis;

2d. Those which refer to the attachments of the uterus, viz. the ligaments;

3d. Those causes inherent to the uterus itself.

A large pelvis, with a capacious, lax vagina, itself disposed to prolapsus, singularly predisposes the uterus to prolapse.

The uterine ligaments, like all other ligaments, may become relaxed. They may become enfeebled by repeated pregnancies, or by changes in the constitution of the woman.

All that which augments the volume or weight of the uterus, operates, sooner or later, in effecting a change in the situation of the uterus. Thus, fibrous tumors, cancers, polypi, inflammations, or other lesions of the cervix, may produce a change in the position of the uterus.

Of the *predisposing* causes, by far the most common is too early resumption of the erect posture after labor. During gestation, the ligaments of the uterus are for a

long time greatly elongated. At the time of labor, the vagina is greatly distended by the passage of the foetus. During gestation, the uterus increases in weight from two ounces to twenty-five or thirty ounces. After delivery, it requires from four to eight weeks for it to return to its normal size in the unimpregnated condition.

Here, then, we have in gestation a physiological preparation for the three pathological causes which we have mentioned of prolapsus.

During *menstruation*, also, the uterus, and in fact, all the sexual organs are physiologically congested. There is increased weight of the uterus, the ligaments are stretched, and therefore weakened, the vagina is also congested, and therefore relaxed. So at this period, any severe exercise, as lifting a heavy weight, dancing, running, etc., may produce displacement.

I am thoroughly convinced, that it is much more common, owing to this cause, among unmarried females, even young girls, than is usually believed or suspected.

Prolonged leucorrhea has been assigned as one of the predisposing causes of prolapsus; but here, it seems to me, a coincident symptom of some other pathological condition has been mistaken for a cause.

Those accustomed to treat uterine disease, have observed that the inflammatory diseases of the cervix are almost invariably attended with a prolapsed condition of the organ. Dr. Bennet is perhaps too exclusive in his views, as to the inflammatory diseases of the cervix being the principal cause of prolapsus. But the fact cannot be doubted, that it is usually accompanied by more or less

descent of the organ, and that it rises higher and higher in the cavity of the pelvis as the inflammatory affection progresses towards a cure.

The *symptoms* arising from prolapsus are by no means proportionate to the degree of the descent of the organ, but depend in a great measure upon the susceptibility of the individual. A delicate, irritable woman, will suffer much more from a semi-prolapsus than a hardy, robust woman, accustomed to active exertion, will suffer from complete prolapsus of the organ. The symptoms are partly mechanical, arising from pressure upon the other organs within the pelvic cavity, and partly sympathetic.

The symptoms of *incipient* prolapsus do not appear suddenly, but gradually. There is a dragging pain in the loins and over the sacrum, increased by any exertion in walking, or even by standing. Pain is also felt in the groin, sometimes extending to and terminating in the labia. This is due to the stretching of the round ligaments. Leucorrhea is almost a constant symptom. This may arise from the excitement produced in the muciparous glands of the vagina, by the irritation of the cervix pressing upon them, or to the associate disease of the cervix. Strangury is sometimes complained of, and indicates more or less inflammation of the prolapsed cervix and the parts contiguous to it. The function of menstruation is said to be rarely suspended in the majority of cases. However, I do not think this is true as regards young women. In them incipient prolapsus is generally accompanied by scanty menstruation, and sometimes

complete amenorrhea. In some rare cases, there is the opposite condition, viz. menorrhagia. When the symptoms I have just mentioned have existed for a long time, you may expect to find the patient complaining of nausea, loss of appetite, flatulence, and constipation. On a vaginal examination, the cervix will be found within an inch or two of the orifice, and resting on the perineum, which it ought not to touch. The vagina is generally moister than natural, loose and flabby, or smoother and less corrugated than usual.

Incipient prolapsus may be confounded with early pregnancy, or with congenital elongation of the neck, or with polypus. In the earliest period of pregnancy, the uterus, obeying the laws of gravity, sinks down into the cavity of the pelvis. The fundus falls a little backwards towards the sacrum, while the cervix approaches or comes in contact with the perineum, and is directed forward. But the absence of the functional derangements of pregnancy, and the presence of the other symptoms which I have just enumerated, will leave little liability to mistake early pregnancy for incipient prolapsus.

In certain females the cervix normally projects more than an inch into the cavity of the vagina. But this condition is not attended with the lumbar and inguinal pains, or indeed any of the other symptoms of depression, except, perhaps, occasional rectal or vesical tenesmus.

Cases are recorded where incipient prolapsus has

been mistaken for polypus. I met with one in a young woman who had been married some eight months. Menstruation was irregular, profuse and painful. The cervix was greatly engorged, pressing on the perineum, and within an inch of the external orifice. Her ordinary medical attendant had probably made a hasty, careless examination, and pronounced the case one of polypus. Moreau relates a case nearly the opposite of this. A young woman of twenty was sent to him from the provinces, on account of a supposed prolapsus. He found a polypus, which he removed by ligature. Polypus is ordinarily accompanied by a sanguineous discharge, prolapsus by a leucorrhœal discharge. The inferior extremity of the polypus is the largest. This fact, and the absence of the os tinæ, will be sufficient to determine the difference between the two.

The diagnosis of incipient prolapsus is by no means complete on ascertaining that the organ is depressed. However, I will reserve what I have to say on this point, until I come to speak of the treatment.

The symptoms of semi-prolapsus are only an exaggeration of those first described. The long diameter of the uterus corresponds with the axis of the outlet. The uterus compresses the rectum and the bladder, and there is frequently difficulty in evacuating these organs. Obstinate constipation from a mechanical cause is not unusual. The strangury arising from this, as remarked by Sir Charles Clark, differs from that

arising from other causes, in that it goes off when the patient lies down.

In complete prolapsus, the uterus has become an external tumor, covered by the vagina. The bladder is turned backwards and withdrawn from the pressure of the abdominal muscles, so that it is evacuated with difficulty and incompletely. The mucous membrane of the vagina covering the uterus, loses its distinctive power as mucous membrane, becomes dry, and resembles skin. By the friction of the thighs, the clothes, etc., the surface becomes excoriated, and superficial ulcerations take place. In some cases inflammation is excited, which results in gangrene and separation of the uterus. The general symptoms of complete prolapsus are often much less severe than those occurring in semi-prolapsus.

The treatment of this form of uterine displacement has afforded a rich harvest for charlatans and quacks. Females who have suffered from "bearing down," and pain in the back, are easily led to believe that they have "falling of the womb;" and large fortunes have been made by more than one in this city, I am told, by the sale of "body braces" and "supporters." Works have been written and extensively circulated among the public, referring a great variety of disorders and symptoms to a mechanical origin; and this seems to be a very *taking* theory, if I may judge by the number of females who have come to me with their abdomens enveloped in steel frames. Still, this af-

fection, when it exists, merits more attention than it has received from most practitioners. There is no doubt that it is generally treated too empirically, by even the well-informed and judicious physician.

If Sir Charles Clark's remark, "that if nothing were done in the way of treatment, a patient laboring under this disease might die from weakness, induced by the large discharges and the disordered state of the stomach; or she might die from inflammation taking place in the parts contained in the inverted vagina, which are more liable to pressure than when in their usual place," be not confirmed by the general experience of the profession, still the evils of this disease are of sufficient magnitude to demand an earnest effort for their effectual removal. The established treatment of most systematic authors may be comprised of two methods: medicinal means applied to the mucous membrane, with rest in the horizontal position, in the milder cases; and mechanical support, in the more severe cases;—the first effected by the injections of cold water, and the various vegetable and metallic astringents; the second, obtained either by external appliances, called "supporters," which take off the weight of the abdominal viscera and increase the resistance of the perineal muscles, or by instruments made of various materials, and of various forms, introduced into the vagina, called "pessaries." I shall detain you with only a word of comment on these methods of treatment.

First, I will admit that some cases get well under each of these plans; but all must agree that a successful radical cure by these methods, is the exception and not the rule. Neither the horizontal posture, rigidly adhered to for a long time, nor astringent injections, can restore the tone of the ligaments; and both of these means are liable to induce obvious evils. I have known more than one case where the general health has been seriously injured by a protracted adherence to the recumbent posture. The supporter doubtless relieves from many of the distressing symptoms of this affection; but I have never known a cure effected by one; and the idea of compelling a young wife to wear such a harness all her life, is anything but attractive. The advocates of pessaries assert that they often do cure; but they must admit that this is not the case in a majority of instances, and that their use is often attended with great inconvenience, and has frequently resulted in serious evils. Notwithstanding the ingenious arguments with which Churchill meets the various objections which have been urged against the use of pessaries, I must still reproduce those which others have urged—viz. that they are merely palliatives, and, like other palliatives, tend to perpetuate the necessity of their application during the life of the patient; that they distend the flooring of the pelvis, and increase the capacity of the ano-perineal region, thus directly aggravating one essential and important

element of the disease; that they provoke mucous discharges from the vagina where they do not exist, and change the character and quantity of existing ones much for the worse; that they cannot be worn by many, on account of the local and constitutional irritation they produce; that they occasionally produce serious and even fatal inflammations; that they interrupt sexual intercourse; that their proper application, and the choice of their form and dimensions so as to adapt them well to each case, is so difficult as to seriously embarrass most practitioners; and that, in numerous instances, pessaries have become so encrusted and firmly embedded in the vagina, as to require a serious operation for their extraction. It is no answer to the last objection, to say that it can only happen from gross neglect; for the neglect may be on the part of the patient instead of on the part of the physician. In fact, I believe that most of these cases have occurred where the patient has removed from the observation of the physician who has applied the instrument; and hence the force of an objection urged by Professor Hamilton, that they subject the patient to the charge of the medical attendant for life.

I shall now call your attention to a plan of treatment on which I have relied for eight years, and which I hope you, as you have opportunity, as have several of my friends, will subject to the test of experience.

I shall say nothing now in regard to preventive

treatment, or dwell upon the necessity of insisting upon the recumbent position after confinement, in those who have previously suffered from "prolapsus," as this will more properly be embraced in my lectures on "midwifery proper."

In the beginning of the lecture, following Vidal, I divided the causes of prolapsus into those inherent to the uterus itself (that is, all those causes which augment the volume or weight of the uterus), those which refer to the state of the vagina and pelvis, and those which refer to the attachments of the uterus. I have said nothing in regard to the doctrine of M. Retzius, who rejects all these causes, and ascribes prolapsus to the distention, by the descent of the bowels, of the inflections of the peritoneum, which are to be found on each side of the womb; because his arguments, to my mind, carry but little weight with them.

Now, the indications for cure must be based on the causes which produce the displacement. Prolapsus, resulting solely from the condition of the uterus itself, usually, I think, subsides spontaneously when the uterine trouble is removed. I have often found the uterus very low in the pelvic cavity when there is inflammatory disease of the cervix, but rising higher and higher during the treatment. I may add that, so far as my experience goes, this is a much more frequent cause than both the others; but it is to prolapsus depending upon the other causes to which

I wish now more especially to call your attention. That there are causes entirely independent of the weight of the uterus, I am perfectly certain; as I have in several instances seen *complete prolapsus* where the uterus was evidently atrophied. Admitting then, both the causes before mentioned, the indications for cure will be, 1st, to retain the uterus in its normal condition; 2d, to diminish the preternatural capacity of the vagina; and 3d, to restore tone to the ligaments. The first is gained by mechanical means, the second by astringents, and the third by fulfilling the first two, and increasing the general vital powers. Very slight support suffices to fulfil the first. I have rarely found any evil resulting from the attempt to accomplish the second, such as injury to the general health from arrest of the accustomed discharges, or inflammation or irritation of the mucous membrane of the vagina. The method which I adopt is the following: I cut out a double thickness of patent lint of a triangular form, so that when rolled up it will form a cone, of a size adapted as nearly as I can judge to the capacity of the vagina. Half an inch from the apex is firmly tied a piece of narrow bobbin, for the purpose of facilitating withdrawal. This is soaked in a saturated solution of tannin. The patient being placed upon her back, the uterus is replaced, care being taken to adjust it so that its axis corresponds with the axis of the superior strait, and the lint introduced with

the apex first; but after it is in the vagina it is turned, so that the base will come under the os tinæ. This is withdrawn, and a new one introduced, twice in the twenty-four hours. In some cases there is soreness and tenderness of the vagina, when I add to each ounce of the solution of tannin zii of laudanum. I have used morphine, but the laudanum seems to be more efficient in removing the soreness. The size of the lint pessary is gradually diminished until the base is not more than half an inch in diameter, when the cure may be considered as accomplished. This should never be left for the patient to do herself. It requires the personal attendance of the physician. The patient will not do it properly or efficiently. You will surely be disappointed if you trust her. If she have means, she will not demur at paying for all the trouble you are at in effecting a cure; if she be poor, you will be amply repaid in seeing her able to perform her duties in life with comfort and ease.

This is a very different mechanical support from the sponge, which expands in the vagina, or any unyielding pessary, or even the sachet "filled with finely grained, not pulverized, Aleppo galls," of which Professor Meigs speaks. This *contracts* in the vagina. It, so to speak, *packs* in the vagina, so that when you withdraw it, you will find it much smaller than when you introduced it. Indeed, I am sure you will be surprised to find how rapidly you are obliged to diminish the size of the lint. But

local treatment is not all that is necessary. I need hardly say that, previous to commencing this treatment, the bowels should be thoroughly evacuated, and that during the whole treatment they should be kept *well opened*. Every man of tact and discrimination will adopt his general treatment to the peculiarities of his patient. Many of this class require tonics. To some I have given three times a day two grains of quinine, in a wine-glass full of the solution of the citrate of magnesia. To others I have given the tart. or the citrate of iron in the same solution. Some I have given the iodide of iron, and recently I have been greatly pleased with the effects of the manganese as a tonic. All do not require tonics. But above all things keep the bowels open, and even after you cease attendance, threaten your patient with all the terrors of a relapse, if she do not keep her bowels open.

Formerly I used to direct my patients to keep the recumbent posture during the first week of treatment; but on finding that my poor patients, who were obliged to keep about, got along better than those in better circumstances, I have now adopted a different course, and send them out into the open air as much as possible, from the beginning.

This mode of treatment is applicable to each of the different degrees of prolapsus. I have before remarked that the symptoms, where there is but slight depression, are quite *as* severe in some, as those attending complete prolapsus are in others. I have several times been led

to suspect, from the severity of the symptoms complained of, that inflammatory disease of the cervix existed; but a careful examination with the speculum revealed no disease. The pain in the back, nausea, fever, vaginal irritation, and constipation, were the result of the depression. Lisfranc declares that all cases of incipient prolapsus are caused by congestion. He directs that the congestion of the uterus should be first treated, and if after that the displacement of the womb continues, the pessary may be applied if the patient can bear it. Now, the lint and tannin pessary applied in the manner in which I have directed, relieves this condition of things at once. To borrow an illustration from Dr. Meigs, it acts like a suspensory in the treatment of orchitis.

In complete prolapsus, you will be able to use this means of treatment when no other form of pessary can be retained or worn. Sometimes it will be necessary for the patient to wear for a time a perineal bandage, but this is not often the case. Please to try this method, and see if you cannot in all cases effect a radical cure. I believe you can, in all cases excepting those where the sacrum is very straight, and there has been great loss of the substance of the perineum.

I could give you the history of many cases of complete prolapsus, where a perfect and radical cure has been effected by this plan. A widow, aged thirty-two, cook for a large and fashionable boarding-house in University Place, had the uterus entirely protruded from the vagina. She was obliged to wear a napkin constantly, to keep

the uterus within the vulva. It protruded at once on removing the napkin. She was cured in two months, by the plan I have described. Soon after, she married a waiter in the house. The third of July she went on a steamboat excursion, and danced a good deal. I was called to see her on the fourth, on account of a severe flooding; and she miscarried with a five-month fetus. She resumed her duties as cook within a week, but there was no return of the prolapsus.

An old lady, sixty-eight years of age, residing in Columbia street, had suffered with complete prolapsus for more than twenty years. Various kinds of pessaries had been at different times adjusted by men of eminence in this city, but for five years she had been unable to wear any. I found her in bed—where she passed the greater part of the time—the uterus small, but the whole tumor external to the vulva, formed by the uterus, vagina, part of the bladder, and part of the rectum, was as large as the egg of a goose. If the tumor was pushed back while lying on her back, it immediately returned. The mucous membrane of the vagina was superficially ulcerated in two places, in one to the size of a twenty-five cent piece, and the other considerably smaller. The cure was effected in three months. The last time I saw her, she said that there was no tendency to falling; and she had left off for some weeks the perineal bandage which I had made for her.

I am often asked, by friends with whom I have conversed in regard to this plan of treatment, if I have never

met with evil consequences from the suppression of the profuse discharge which usually attends the prolapsus? I have, two or three times, but not within the last five years. Formerly I was less careful than now, to use laxations *freely* during the whole course of treatment.

In my next lecture I shall ask your attention to the subject of *retroversion* of the non-gravid uterus.



REMARKS
ON
SOME FORMS OF DISEASE
OF THE
CERVIX UTERI.

BY
B. FORDYCE BARKER, M. D.



MR. PRESIDENT AND GENTLEMEN :

IN offering for your consideration a few observations on some forms of non-malignant disease of the cervix uteri, I hope to call the attention of the medical practitioners of this State to a class of diseases, the pathology and appropriate treatment of which, have been, until very recently, entirely misunderstood. From their very great frequency, and their vast importance as affecting the comfort and happiness, not only of the individual suffering, but that of her family and friends, this class of diseases merits the most attentive study, the most patient and careful investigation. The progress which has been made in physical diagnosis and accurate pathological knowledge, during the last half century, is truly wonderful. At the present day, almost every physician avails himself, (or professes to,) of the important, I may say indispensable aid furnished by auscultation and percussion in diagnosing disease of the lungs and heart. Even the non-professional public have become so fully alive to the great advantages to be gained by these methods of examination, that the quack and the ignoramus are compelled to thump the chest and apply the stethoscope in order to retain the confidence of their deluded victims. Equally great have been the improvements made in the diagnosis of uterine disease and its true pathology. But the profession as a class, both in this country and in Great Britain, have not been equally ready to reap for themselves, or to confer upon their patients, the advantages to be gained from these new discoveries. Even practitioners who are familiar by their reading, with the progress which has been made in uterine pathology, have been restrained by an almost criminal fastidiousness and a perverted sense of delicacy, from using the necessary means of exploration, and as a

natural consequence, when their services are sought for, on account of a leucorrhea, or menorrhagia, or a prolapsus, they have contented themselves with the old routine of tonics, astringents, injections, or worse yet, have ordered an abdominal supporter, or applied a pessary. Sometimes the poor patient has been, undoubtedly, benefitted by even this routine of practice; sometimes, beneficent nature has taken the case into her own hands, and effected a cure, but more generally the unhappy sufferer has been compelled to drag out in patient endurance, years of misery and weakness, worn down by a leucorrheal discharge, or a uterine hemorrhage, wretched in body and in mind; peevish, irritable and hysterical, a burthen to herself and a "thorn in the flesh" to her immediate relatives and friends, and in many, very many cases, bitterly disappointing family hopes in wanting the blissful anticipations of a mother's joys, on account of obstinate sterility, or oft repeated abortions. This is no fancy sketch, but many such, I have no doubt, are within the knowledge of every medical man engaged in active practice, in this State. All writers, who have made this class of diseases a subject of special investigation, speak of their very great frequency. It has been supposed that nearly one-half of the married females suffer to a greater or less degree from some form of uterine disease.

I propose to speak of some forms which, from my own experience, I am satisfied are of frequent occurrence with us, but which are hardly alluded to in our systematic works on female diseases. I would call your attention first to *Granulations of the Cervix uteri*. I am not aware of any work in the English language, which gives a description, sufficiently full or accurate for the practitioner to recognize or understand this affection. In the excellent work of Dr. Churchill, there is a meagre and imperfect sketch of it.

Dunglison, (Practice of Medicine,) devotes one-third of a page to it as a *sequela* of acute and chronic inflammation of the uterus. It is not mentioned by Ashwell or Lever. In the work of Colombat de L'Isere, (translated by Dr. Meigs,) there is a very brief, imperfect and erroneous description of it, evidently hastily copied from Boivin and Duges, and confounded with inflammatory affections of the cervix. It was, first, as I think, correctly described by Mad. Boivin, (*Maladies de l'uterus par Boivin et Duges.*) It is briefly alluded to by Dupareque, but more fully described in the *Bibliothèque du Médecin-Praticien*. I hope to be pardoned for saying that it seems to me, all the writers above referred to have been in error as to the true pathology of this affection. I heard a most excellent clinique on the subject by M. Chomel, at the Hotel Dieu, and have often seen this form of disease, both in the Parisian Hospitals, and in private practice within the last two years and a half.

Granulations of the cervix uteri seem to consist of an hypertrophy of the mucous membrane, or of the numerous follicles which exist in the thickness of this membrane, more abundant in the uterine orifice than every where else. The French in describing it, have used the term *framboisée* from the little hard fleshy elevations on the *os tincæ*, resembling the distinct elevations of the raspberry. So also, some of them speak of it as a granulous or raspberry-like inflammation. (*Inflammation granuleuse ou framboisée.*) But this is incorrect; it is not an inflammation but an affection *sui generis*, peculiar to this organ. The only part of the system in which analagous granulations are found, is the pharynx, as the pharynx alone possesses the same follicular disposition. Neither is it, as some have supposed, a result of inflammation. Inflammations have a period of increase, a period of *statu quo*, and a period of decrease, to which suc-

needs the cure. Affections which do not present these three periods, may, it is true, offer inflammatory symptoms, but they are not veritable inflammations. Inflammations are those diseases which exciting agents exasperate, antiphlogistic means moderate. But this disease has not this character; antiphlogistics do nothing for it. Again the terms, granulous excoriations, granulous ulcerations, have been employed to designate this disease, but they are equally improper. In ulceration there is always a loss of substance more or less extensive. But in the granulated state of the neck of the uterus, there is always a relief, a projection, an increase of substance; the prominence is perfectly appreciable to the touch. Furthermore, the granulous state is accompanied by an excretion of glutinous, tenacious, semi-transparent, or sometimes slightly opaque and puriform mucus. Ulcerations on the contrary, present the veritable pus at the surface without mixture of mucus of any sort. Granulations of the cervix uteri have also, no doubt, been confounded with carcinoma, but they have nothing in common with cancer. Carcinoma uteri commences by the development of globulous tumors upon the neck, which the touch may signalize, but which frequently cannot be seen by the speculum. The granulations, on the contrary, commence in the interior of the neck, and extend by degrees from within to without. Carcinomatous tumors commence externally, going from without to within. Chomel* has never known but one female, who commenced by having granulations, in whom it degenerated into a cancer.

Causes. These are so very obscure, that it is very difficult, not to say impossible, to determine them. Some have said that abuse of venereal pleasure, the repeated contact of the male member was one of the most frequent. But wo-

*MSS. Notes.

Men of pleasure are not more subject to it than other women. Those who have had children present this affection more frequently, but it often occurs in those who have never borne children. So one may consider pregnancy as a predisposing, but not as an exciting cause. There is one circumstance which the French pathologists have found frequently allied to the existence of these granulations, that is anterior chronic affections of the skin. A great number of patients in whom these granulations are found, have been formerly affected with those diseases of the skin, confounded under the name of tetter. This fact has been observed at the Hospital St. Louis, where cutaneous diseases are specially treated. They have found that herpetic affections have preceded the development of uterine granulation in women; in men, granulations of the pharynx, which have been mentioned above as having some analogy with granulations of the neck of the uterus. So it would not be too much to suppose, that there exists between them, something in common, having the relation of cause and effect.

Symptoms. The existence of this disease can only be absolutely recognized with the sight, by the aid of the speculum and by the touch. But there are various functional symptoms which would draw the attention of the observing physician to the uterus. There are some derangements in the functions of this organ, or in the groin, pains more or less severe in the side, (most commonly, I have observed, under the false ribs in the left side,) leucorrhœa more or less abundant, a derangement of the menstrual evacuations, so that the physician is induced to examine the genital organs. There is no heat of the parts, no exaltation of the sensibility. Although there is pain in the parts above-mentioned, yet rarely is the suffering augmented by coition, or by the touch. The leucorrhœal discharge is sometimes moderate

in quantity, consisting of a thick, tenacious, semi-transparent mucus, resembling the white of an egg, a little beat up. In other and perhaps a majority of these cases, the discharge of albuminous mucus is very abundant, running down the thighs at times when the patient walks, producing a sensation of chilliness. Hemorrhages are very common in this affection, and they may consist either in an abnormal augmentation of the menstrual flux, or in a proper hemorrhage between the menstrual periods. The debility and emaciation resulting from the menorrhagia are perhaps the most frequent cause of the patient's seeking medical aid, unless at an earlier period, she has been led by the old women learned in these matters, to believe that the vague pains in the groins and lumbar regions, and the dragging sensation at the lower part of the abdomen are caused by falling of the womb.

There is another symptom so common as to merit attention, that is, sensations or pains at the pit of the stomach, which patients frequently describe as "pulling or dragging of the stomach." These sensations, as remarked by Chomel,* have this important particular for their diagnosis; as they are sympathetic with the morbid state of the uterus, the presence of aliment in the stomach effects no change in them; while in pains of the stomach, which are idiopathic, the presence of aliment is not at all indifferent. Another phenomenon which coincides frequently with this disposition of the cervix uteri, is the absence of conception, a sort of accidental or symptomatic sterility. It is said that this is not a constant phenomenon, but that there are some who become pregnant not only during the course of the disease, but also during the course of the treatment: but nevertheless in a great majority of cases, there is sterility, and in ex-

*MSS. Notes,

amining with the utmost care, nothing is found in the uterus itself which explains the absence of conception. The question then arises whether these granulations have not something to do with the sterility. When the mucous membrane, which covers the internal surface of the orifice, is tumefied, this tumefaction diminishes by so much, the diameter of the orifice, and may oppose the penetration of the semen into the cavity of the organ. Then the viscous, glutinous character of the discharge from this orifice, its physical properties are opposed to fecundation, as the mucus is often so tenacious that it is difficult to raise it with the speculum forceps. Furthermore, it has been remarked by several observers, that women who have been married several years, and who were found to be affected with this disease, have become enciente after having been subjected to the appropriate treatment, followed by a cure. Three such instances have occurred in my own practice, two of whom are now happy mothers, and the third soon hopes to be.

Diagnosis. This is not usually difficult if we resort to the touch, and the aid of the speculum. By the touch we find a portion of the mucous membrane of the cervix uteri feeling softer than usual, something like velvet; and in this portion the granulations are very distinct, as if millet seeds were imbedded in the mucous membrane. Sometimes they attain a size nearly as large as a small pea. The surrounding healthy portion feels smooth, firm, and polished. As this disease always preserves the same disposition, commencing at the centre of the orifice as the point of departure, and extending towards the external circumference of the orifice as it progresses, we shall invariably find the softening and the granular elevations near the centre of the orifice, while the external circumference will retain its nor-

mal firmness and smoothness. I believe that this affection never implicates the whole of the cervix. By the touch alone we can then recognize this affection, but as the speculum is absolutely essential to its appropriate treatment, we can then avail ourselves of its important aid in confirming our diagnosis. Indeed, without the speculum, we can neither limit nor define its extent; and even the existence of this state was entirely unknown previous to the invention of the speculum, which permitted one to see a very marked change between the portion around the orifice, and the external circumference. The latter offers a pale rose tint, like that of a healthy mucous membrane of the mouth; while, on the contrary, the diseased portion near the orifice, is of a reddish violet color, with the unequal granulated surface very apparent. This is sometimes seen within the orifice itself, extending by degrees to the neighboring parts. Its progressive development is not constantly the same. Sometimes it extends only to one lip, sometimes to both. Its form also is variable. So then, the two pathognomonic signs of granulation of the cervix uteri are redness, and a granulated, unequal surface, appreciable both to the touch, and to the sight. It happens frequently that when the speculum is introduced, one can distinguish but imperfectly the spots of which we have spoken, because a certain quantity of the mucus covers the neck and conceals the granulations. It is necessary then to wipe it away by means of long straight-handled forceps, with a dossil of lint or cotton; and this should be sufficiently large to accomplish the object quickly, and sufficiently soft not to wound the neck of the uterus. It is not always easy to wipe from the neck the mucosities that cover it, they are so viscous, thready, and adherent. By touching with the nitrate of silver, an artificial coagulation is produced, rendering their removal easy.

Treatment. General or constitutional measures exert no influence over this disease ; and, as has been remarked above, antiphlogistics are of no avail. Of all therapeutic means, cauterization is the only one which has been employed with success. This should always be effected by substances of medium energy ; as, when these are used, the physician can always see the diseased part in its normal aspect, and natural condition. Jobert de Lamballe, at the Hospital St. Louis, generally makes use of the hot iron, the actual cautery ; Lisfranc, the acid nitrate of mercury ; but Chlommel and others prefer the nitrate of silver in the solid state ; and it has this advantage—that we are enabled to touch the projecting portions first with the point of the caustic. It has been objected to the nitrate of silver, that in mixing with the vaginal mucosities, it determines a discharge which turns the linen black when suppuration of the eschars takes place, and that it sometimes produces a little discharge of blood. But this sanguinolent discharge is entirely insignificant and without value. Some have recommended injections after the cauterizations, to raise the superfluity of the caustics ; but this method is bad, instead of which, we should very gently wipe it off with the dossil of lint. The cauterizations should be repeated a great number of times, or, at least, until the granular surface has entirely resumed its normal aspect. The day one practices cauterization, the patient should remain some time in the horizontal position, in absolute repose.—This may be repeated every sixth or eighth day, unless, from the effects of the disease and the treatment, the patient becomes so nervous and irritable, as to make a longer delay necessary. During the whole period of treatment, such means should be used as the state of the general system may demand.

I would next ask your attention to the subject of Inflammation, Ulceration and Induration of the cervix uteri. Recent investigations have proved that this class of affections are exceedingly common, and that they are the cause, in a large majority of cases, of the various functional derangements, as menorrhagia, dysmenorrhea, leucorrhœa, prolapsus uteri, &c. which have usually been studied and treated as distinct diseases. There is, probably, no branch of pathology which has been so little understood, no class of diseases which have been so badly treated. Every practitioner is aware of the extreme prevalence of the functional disorders above-mentioned, and of their intractable character under the ordinary routine of treatment. A recent writer of ability, (Whitehead) believes that scarcely less than one half of all married women between the age of twenty and forty-five, are constantly suffering under the influence of uterine disease, and his researches have demonstrated that besides these functional disorders, it is the most frequent cause of sterility and abortion. I shall endeavor to give a résumé of the present state of our knowledge of these affections of the cervix, for which we are indebted principally, to the labors of Boivin and Duges, Duparcque, Lisfranc, Emery, Jobert de Lambelle & Castilhes, in France, Bennet, Montgomery, Kennedy and Whitehead, in Great Britain.

Inflammation of the cervix, with its sequelæ, ulceration and induration, may occur in the virgin and in the married, who have not borne children, but it is much more frequent in those who have borne children. The character of the disease is essentially the same in the three classes, arising from similar causes, producing similar symptoms, and requiring similar treatment in all. I have had no experience in the disease occurring in virgins. I will only say in re-

gard to it, that Dr. Bennet has found it the most frequent cause of the severe dysmenorrhea and inveterate leucorrhea, connected with great general debility and prostration, which occur occasionally in the virgin female; and that from the increased volume and weight of the cervix, a partial prolapsus is sometimes produced, as in the married female, the treatment of which by pessaries, is not only of no benefit, but productive, oftentimes, of the most disastrous results.

Causes. In brief, the most frequent causes of this disease, are supposed to be labor and abortion. To these may be added, sudden suppression of the menses, or of the lochia, the irritation arising from sexual congress, or produced by the use of pessaries, aphthous inflammation of the vagina propagated to the os. tincæ, and metritis localising under a chronic form in the cervix.

Symptoms. I will mention only those which may be regarded as characteristic of this disease, omitting entirely those which occur in common with other local inflammations. Painful and difficult menstruation conjoined with a *permanent* leucorrheal discharge, may be regarded as almost pathognomic of this affection. Dysmenorrhea alone may exist without disease of the cervix. There are some who from a peculiar organism, suffer pain during the catamenial period from the first appearance of this function, and this may arise from mechanical obstruction or from a neuralgic condition, developed by the uterine excitement which exists during menstruation. The previous uterine history of the patient should then be carefully learned, and if it is found that the menstruation became painful and difficult, *for the first time*, after a sudden suppression of the menses, or after marriage, or after labor or an abortion, we have strong presumptive evidence that inflammatory dis-

ease of the cervix is the cause, and this diagnosis is confirmed if the dysmenorrhea be accompanied by a constant leucorrheal discharge. The absence of all leucorrheal discharge does not positively prove that there is not inflammatory ulceration and induration of the cervix, because the secretion from the ulcerated surface may be so small in quantity, that the surrounding tissues may completely absorb it, so that no discharge is observed. Many females have a leucorrheal discharge two or three days previous to the menstrual discharge, and also two or three days afterwards, it being entirely absent in the intermediate periods, and may be regarded as their normal state. But if there is a constant, white starch-like or yellow vaginal discharge, and this is associated with dysmenorrhea, continuing through the whole menstrual period, we may be nearly certain that this disease of the cervix exists. The menstruation may be scanty under these circumstances, or it may be profuse, constituting a menorrhagia. The patient ordinarily suffers from a constant "aching pain" in the hypogastric, inguinal and lumbar regions. The pain is usually increased by pressure made just above the pubis, but relieved by pressure in the inguinal regions. But this is not always the case, as there is sometimes very great tenderness over the whole of the lower part of the abdomen. If the disease has been of long standing, the patient suffers from "beating and throbbing" in the back, and sometimes excruciating pain directly over the coccyx. The digestive organs become deranged, there is a bad taste in the mouth, a coated and flabby tongue. Not unfrequently, pulmonary symptoms appear, attracting more attention both from the physician and the patient than those which indicate the real cause of her ill health. In many, the moral nature is remarkably changed, the patient becoming capricious and

unreasonable, peevish and despondent, and tortured by a thousand nervous symptoms. The hysterical phenomena are ordinarily very much aggravated during the menstrual period, occasionally inducing cramps and convulsions.—When the disease has become inveterate, the sense of weight and bearing down in the pelvis, induces the patient and oftentimes her medical attendant to believe, that she has prolapsus uteri, and an abdominal supporter or a pessary is applied. While I regard these troublesome and inconvenient appliances as absurd and unphilosophical in all cases, and productive of positive injury in many, yet I have no doubt that the abdominal supporter, for example, often relieves the patient from the pains over the pubis, in the groins and in the back, by its pressure upon the integuments and the uterine ligaments, thus interrupting the communication between the uterine and the spinal nerves distributed to the surrounding viscera. But it never cures, it only conceals.

Although the symptoms above enumerated, indicate with a great degree of probability, the disease of the cervix now under consideration, yet we must resort to the touch and to the speculum, for absolute proof of its existence. By the touch, we easily recognize the increased size and density of the cervix, and the absence of the unctuous, greasy feel of the os. If inflammation of the cervix exists without ulceration, the mucous membrane will feel smooth and equal, and the tissue of the cervix will be found more elastic than when in its normal condition. The sensation produced by the ulcerated surface has been compared to that of velvet, and if the tissue beneath be indurated, to that of velvet covering any hard substance, as a table for example. Sometimes fissures are distinctly felt subdividing the cervix into lobules, the tubercles of the older writers. The cervix is

found lower down in the pelvis than natural, constituting a greater or less degree of prolapsus, and generally directed backwards towards the concavity of the sacrum. From the induration which exists in some cases, one might be led to suspect a cancerous deposit, but the error will be corrected if the history of the case is carefully sought for, and by observing the freedom of the vagina at its union with the neck, and the movability of the uterus within the pelvic cavity, which is not the case in cancer. The os uteri is ordinarily more or less open, sometimes admitting with ease the first phalanx. The presence or absence of pain from the touch cannot, I think, be regarded as a means of diagnosis.

On examining with the speculum, there is always seen more or less of the muco-purulent matter around and covering the os. On removing this with a dossil of lint, the tumefied cervix is seen, sometimes so much enlarged, that both lips cannot enter at the same time the speculum.—“When inflamed the tumefied cervix presents a more or less intense red, glistening hue, instead of the pale, dull whitish color, which is natural to it.”—(Bennet.) If ulceration exists, the ulcerated surface may offer all the varieties of appearance, common to suppurating surfaces in other parts of the body, from a slight abrasion, to the large flabby bleeding granulations. From the different appearances which these ulcers present, some have described the granular ulcer, the fissurated ulcer, the varicose ulcer, the “cock’s-comb granulation,”—(Kennedy, Dublin Quar. Journ. of Medical Science,) &c.; but these divisions seem to me, to have no practical value except as facilitating description. The character and treatment are essentially the same, varied only as the discriminating, well read physician, would vary it on general principles.

Treatment. As my design in this dissertation is simply to call the attention of the profession in this State to this important class of diseases, not to arrogate to myself the office of a teacher, I shall mention in the briefest manner, the treatment which I believe to be inculcated by the best authorities, and by which I have been governed in my own practice, omitting entirely all discussion of the various novelties now proposed in Europe. If there is simply congestive engorgement or acute inflammation of the cervix uteri, leeches, applied by means of the cylinder speculum to the diseased part, constitute the most essential part of the treatment. Even one application of a half dozen of leeches, I have known to produce a wonderful change in the general condition of the patient. The leeches may be encouraged to bleed, by a continued irrigation of the cervix, with as warm water as can be borne, and this may be accomplished either by the syphon proposed by Dr. Kennedy, or by the ordinary self-injecting apparatus now in so common use. The patient should preserve as much as possible the recumbent posture, for several days after the application of the leeches. Lying in a warm bath, if practicable, for an hour or more every day, is, I think, of very great service. Counter irritations, as Granville's lotion, sinapisms, &c., applied over the pubis, often seems productive of great relief. If to the above be added a saline purgative every other day, and colchicum and camphor every few hours in the intermediate period, I think a cure will ordinarily be effected in a very short period. If the disease of the cervix has assumed the chronic form of ulceration and induration, cauterization constitutes the most essential part of the treatment. For this purpose the nitrate of silver, the acid nitrate of mercury, the potassa fusa, the Vienna paste, and the actual cautery have been used. Without entering into any

discussion in regard to the comparative merit of each of these different articles, I will merely say that in my own practice, I have made use of only the nitrate of silver, the acid nitrate of mercury, and the actual cautery. The principles which govern me in selecting the agent to be used are the following: if there be only simple ulceration, without much induration of the tissue beneath, the nitrate of silver is to be preferred. If the ulceration is somewhat extensive, with partial induration, I prefer the acid nitrate of mercury. If the ulcerated surface presents a fungous appearance, and is accompanied with deep seated induration, I resort at once to the actual cautery, as it seems to me more manageable, and less liable to produce injury to the surrounding parts than either the Vienna paste or the potassa fusa. It produces not the slightest pain at the time of the application. Whatever may be the agent that is used, no pain is caused by the operation, but the general symptoms are usually aggravated a few hours afterwards, continuing sometimes for two or three days. In the five cases in which I have made use of the actual cautery, I have thought the subsequent symptoms were much less severe than in those cases, where I have used the nitrate of silver or the acid nitrate of mercury. The only other local treatment necessary, is the frequent use of weak astringent injections, as alum, tannin, sulphate of zinc, &c. As a palliative, I have found the injection of cold water into the rectum, night and morning, more satisfactory than any thing else. I shall not occupy your time with any remarks in regard to the necessary constitutional treatment, as the practitioner will be guided by the general indications of the case. I believe that the mistake that I have made the most frequently, has been in resorting too early to the use of tonics. However weak and anemiated the patient may have been, tonics have

seemed to do harm, while the patient was subjected to deep cauterizations. When the tissue of the cervix has recovered its normal condition, then tonics judiciously prescribed, seem to build up the patient at once. Pregnancy has been formerly regarded as an indication that the local treatment should be discontinued. But the observations of Bennett and Whitehead prove that not only is it safe and free from danger of producing abortion, but that it is the most certain means of preventing this occurrence; diseases of the cervix being by far the most frequent causes of abortion. In 318 cases of abortion, Mr. Whitehead (on the causes and treatment of sterility and abortion) found the disease of the lower part of the uterus to be the cause in 275. The other causes which he mentions, are, accidental agencies in 44; placenta previa in 8; constipation, 3; retroversion, 3; incurable disease, 1; vascular congestion, 15; obscure causes, 29. More than seventy per cent. of the abortions arise from diseases of the cervix. We can easily conceive then, that the successful treatment of the disease, will be the most effectual means of preventing the abortion. I have never been called to treat a patient during pregnancy, but I should regard its existence as a more urgent reason for subjecting the patient to the appropriate treatment.

I will submit to you an abstract of the more important symptoms attending thirty-three cases which have come under my care, as I should exhaust your patience, were I to give a detailed report of each. All were or had been married. Twenty-one had borne children, and of the remaining twelve, seven had aborted; one, four times, three twice, and three once each. A constant leucorrhœal discharge was a symptom in every case. This discharge was in some white, in others yellow, and in five it was frequently sanguinolent, particularly after connection. Dysmenorr-

hea (I restrict the term to those cases where the pain continues severe through the whole catamenial period,) existed in nine cases. In *all*, the first day of the menstrual discharge was attended with a good deal of pain. Menstruation was profuse in thirteen, scanty in three, irregular as to its appearance and sometimes profuse and sometimes scanty in five. The "bearing down" symptoms were the most prominent in thirteen, eight of whom had worn abdominal supporters, four had worn pessaries, the other was accustomed to wear a belt of her own construction, which she thought relieved her. Two patients had no suspicion that they were subjects of uterine disease, but sought medical advice on account of some pulmonary symptoms, which alarmed them extremely. These however entirely disappeared when the disease of the cervix was cured. I think the above analysis embraces all the important general symptoms, except those which may be regarded as purely nervous. These were so numerous, and presented such a variety of characters, that it would be impossible either to analyze or to classify them.

I will ask your indulgence while I give a somewhat detailed report of three cases, which I think offer some points of peculiar interest. *Sept. 6, 1846, I was called in great haste to see Mrs. —, who was represented to be in a dying state. I found her in a violent hysterical paroxysm, really alarming to her friends, as they never had seen her in such a state before. She was of a florid complexion, very full plethoric habit, and had always been in perfect health, the bystanders stated. But on visiting her the next day, I learned the following history. Up to the time of her marriage, which was five years before, she never had had an ill day to the best of her recollection. Five weeks after she was married, she was attacked with what her physician

called "inflammation of the bowels." Soon after her recovery, she first observed a leucorrheal discharge. It was sometimes white, sometimes yellowish, and at other times greenish, but she "did not think there had been a single day that she had been free from it, except when she was unwell." She had aborted three times, the last time, (in Jan. 1845) she was obliged to call in medical aid "after she got all through," on account of the flowing, which was very excessive. Since that time menstruation had been growing more and more painful. She could not recollect that she had suffered during the catamenial discharge previous to the last abortion. Coition had been painful and disagreeable to her since she had "inflammation of the bowels." More than a year ago it became so extremely painful and intolerable, that she "had been compelled to live like a nun ever since." These were her exact words. The menses had been diminishing in quantity for the last six months. The two periods previous to my being sent for, had continued but two days each, which she had been obliged to pass upon her bed on account of the severity of the dysmenorrheal pains, and a most distressing vertigo. She was perfectly willing to submit to any treatment which would offer a prospect of cure, on account of the unhappy coldness existing between her husband and herself, which she described as amounting to absolute hatred on his part, which was breaking her heart, but which had been most studiously concealed from her most intimate friends, as they erroneously supposed. At this time her skin was hot and dry, pulse quick and hard, pain in the head, back, and along the thighs. No satisfactory information could be obtained by the touch, on account of the extreme tenderness of the cervix uteri, except that it was very low down in the pelvis

*These cases are related by permission.

and much enlarged. I therefore directed her to remain in bed, and to take the following medicine, viz: Pulv. Rad. Colchic. one drachm, Pul. Gum Camphor, two scruples, Ext. Hyoscyamus, one scruple, M. Div. in chart No. 10. S. One every fifth hour. If there was no movement of the bowels, she was to take on the next day Sulph. Magnes. one ounce, Tart. Antimonii et Potassae, gr. i. Sacci Limonis, Aq. Puræ, aa two ounces, M. Sept. 10. The general appearance of the patient had very much improved. The mixture had operated freely, both as an emetic and cathartic. I did not attempt to examine by touch, but introduced the speculum, with some pain, for the purpose of applying leeches to the cervix. There was an abundance of muco-purulent secretion in the upper part of the vagina, on removing which with a dossil of lint, a part of the anterior lip was seen, of a deep red color, but no ulceration was visible. Eight leeches were applied. She was directed to inject into the vagina, four or five times a day, a warm decoction of poppy leaves, and a pint of cold water into the rectum every morning.

Sept. 18. The patient so much better, that I was able to get a good examination. The cervix is low down, enlarged, offering to the finger very distinctly, the velvety sensation around the orifice, and well marked lobulated indurations. By the speculum, the orifice was about a half inch in length, somewhat patulous, from which I wiped nearly a teaspoon-full of a muco-purulent secretion, when an ulceration was distinctly seen, occupying both lips. The ulcerated surface was of a bright red color, and did not bleed. Cauterized with the acid nitrate of mercury. In the evening, ten hours after the cauterization, she had a second hysterical paroxysm, more violent than the first. The succeeding two days her symptoms were all aggravated :but

after that she improved so much, that it was with difficulty she could be persuaded to remain in bed. Weak injections of sulph. zinc and alum, were substituted for the decoction of poppy, she continuing the cold water enema every morning.

Sept. 26. The cauterization was repeated, the immediate effects of which were much less severe than before. The menses appeared on the 30th, nearly a week earlier than she anticipated, lasting three days, but attended with a good deal of pain. Cauterized again Oct. 8th. On the 15th, the induration was entirely gone, and the ulcerated surface completely healed, but as purulent matter was seen issuing from the orifice, I introduced nearly an inch into the cervix, the solid nitrate of silver, and again on the 20th.—The menses appeared on the 24th, continuing for five days, and without pain, except just before their appearance. I then permitted her to resume her ordinary habits. Nov. 12th. On an examination with the speculum, and by the touch, no appearance of disease was discovered. The patient described herself as being perfectly well, and it was sufficiently evident that connubial harmony was restored. Dec. 15th. A speculum examination was made, as the patient had some symptoms which led her to fear that the disease was returning. An irregular erosion with some increased redness was visible on the anterior lip; the solid nitrate of silver was applied, a temperance lecture was given to the husband, and the patient has had no occasion for medical aid since, except on one occasion, when the squalling of a fine baby was deemed delicious music by at least three persons, the parents and the accoucheur.

CASE II. The patient in this case was forty-two years of age, the mother of eight children, the youngest eight years old, since the birth of which she had never been preg-

nant. She was very pale, extremely emaciated; and years before, she had worn out the patience of every regular practitioner in the vicinity, since which she had tried every itinerant quack, and every patent medicine that she could hear of. I shall not attempt to give a history of the case as it was related to me, as it was the most tedious that I was ever compelled to hear, she seeming to fear all the time that I should not attach sufficient importance to every ache and ail she had suffered since her childhood. Among other complaints, according to her opinion, she had "two consumptions," "liver complaint," "the gravel awfully," and "falling of the womb." She asserted, that many years she had had a constant leucorrheal discharge, but that she had been "flowing" every day for the last five months, which statement was confirmed by her husband's sister, who was present. The discharge had never been fetid. On a digital examination, the ulcerated surface was distinctly felt, the anterior lip seeming shorter than the posterior, indurated and voluminous. The touch was *not* painful, and the uterus was perfectly movable. On introducing the speculum, it was half filled with a bloody, sanious discharge, on removing which, a fungous ulceration was distinctly visible, completely lining the field of the speculum. On varying the direction of the speculum, so as to bring into view the other parts of the cervix, about one-third only of the posterior lip was found free from ulceration. The diagnosis was extremely doubtful in my mind, whether it was a corroding ulcer, an ulcerated cancer, or an inflammatory ulceration.

It was impossible for me to decide satisfactorily whether the increased size of the cervix was due to engorgement or to morbid deposition in the part. But the uterus was movable, and the discharge had never been fetid, two facts op-

posed to the idea of carcinomatous ulceration, and the fungous granulations appeared too large for corroding ulcer. On suggesting, with a good deal of hesitation, that there was a bare possibility that some benefit might accrue from cauterizing with a hot iron, to my utter astonishment, she at once insisted it should be done, evidently from a morbid desire for sympathy on account of being the subject of such a terrific operation. Not to weary you with a minute detail of the case, I will say in general terms that the cervix was cauterized with the hot iron three times, and with the nitrate of silver twice, the intervals between each cauterization varying from eight days to three weeks, and that a perfect cure was the result. It is now more than a year since she has had any uterine discharge, either sanguineous or leucorrhœal, and her general health is now excellent. A little of the old spirit however remains, as the last time I saw her, some two months since, she was very much afraid that her flesh was bloat and her color hectic.

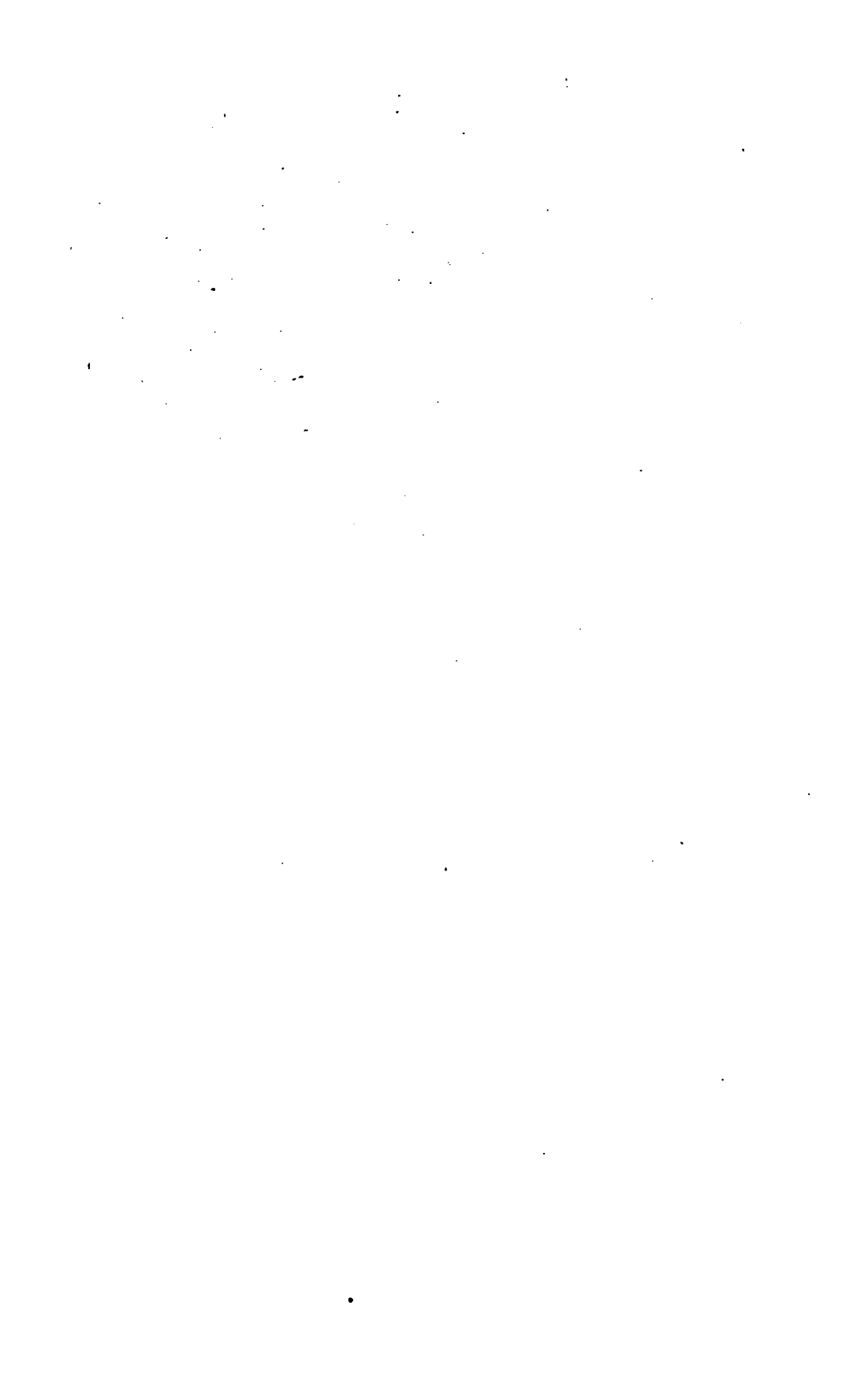
CASE III. I shall relate in very brief terms this case, solely for the purpose of showing how easy it is to be mistaken, and of enforcing the importance of caution in prognosis. The patient was pale, feeble and emaciated from a menorrhagia of three years standing. It had been several times arrested for a short period, only to recur again with increased violence. She was the mother of three children, the youngest six years old, since the birth of which she had never conceived. The slightest exertion, as going up stairs or riding in an easy carriage, would frequently bring on a sudden and profuse discharge of blood. I will do myself the justice to say, that in the outset I suspected a polypus, but on making a most careful examination, I found nothing to confirm my suspicion. The cervix was moderately tender to the touch, the orifice open, admitting the ungual

portion of the finger, with apparently a very superficial induration of the anterior lip. The vaginal portion of the cervix seemed to me full two inches in length, but not enlarged to any considerable extent. From the result of this examination and a full history of the case, I was induced to urge upon my patient a specular examination, which she with some reluctance consented to. On discovering a superficial ulceration of some extent, involving both lips of the cervix, I was stupid enough to promise a very speedy cure. The ulceration was soon cured, but not so the uterine hemorrhage. This continued, although not the slightest disease of the cervix could be discovered by repeated and careful examination, both by the touch and with the speculum. Every known remedy was resorted to, with but very little benefit, until at last I lost all confidence in myself, and plainly told my patient so. She became subject to repeated attacks of hemorrhage from the nose, and her general health was fast breaking up. Thus the case went on, for nearly four months, when in October last, I read an article by Dr. Bennet, in the London Lancet for August, 1847, on ulceration of the cervix uteri, accompanying uterine polypi. Another specular examination was made, separating the lips of the cervix with the speculum forceps, so that a portion of the cavity of the cervix was distinctly visible, but nothing could be detected indicating the existence of a polypus. On attempting to examine with a probe, so much hemorrhage came on that I was obliged to desist from farther exploration. She was so much exhausted by this examination that she kept her bed for a week, and three weeks were allowed to pass before she was again subjected to another examination. At this time a sponge tent was introduced into the cervix, and retained in its place by filling the vagina with old linen, and this was allowed to re-

main, she keeping her bed for two days. The last day she suffered from pains which she described as being exactly like labor pains, only more severe than she had ever experienced. On removing the tampon and sponge, a profuse discharge of blood took place, obliging me to wait nearly two hours before I judged it proper to proceed farther. On introducing the speculum, and separating the lips of the cervix, the cavity of which was a good deal dilated by the sponge, the cause of all her trouble was apparent, although imperfectly so from the constant oozing of blood. With a good deal of difficulty I succeeded in twisting and pulling off with the forceps, the polypus which I now exhibit to you. Symptoms of acute metritis, requiring active treatment for a few days, came on directly after the operation, followed again by ulceration of the cervix, which yielded readily to canterization with the nitrate of silver. Her restoration to health was slow but complete.

It was my intention to have added a few observations on some of the functional disorders which occur so frequently, as symptoms of the diseases which we have been considering, but I have already taxed your patience too severely.—Allow me in conclusion to state my conviction that a large majority of the cases of prolapsus, dysmenorrhea, menorrhagia, and leucorrhea, which the medical man is called upon to treat, arises from organic disease of the cervix uteri. Dr. William C. Roberts, in by far the very best paper I have read on the subject of leucorrhea, (*New York Journal of Medicine* for May and July, 1845,) demonstrates, most satisfactorily to my mind, that this is the true pathology of leucorrhea, and I have no doubt that future investigations will establish the fact, that the other affections referred to above, are rarely idiopathic diseases.







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